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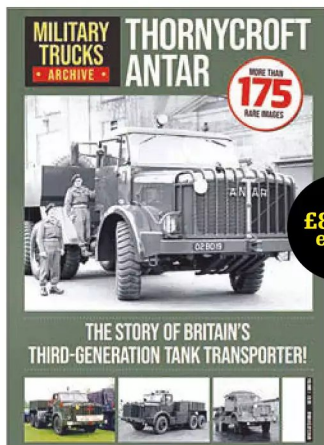
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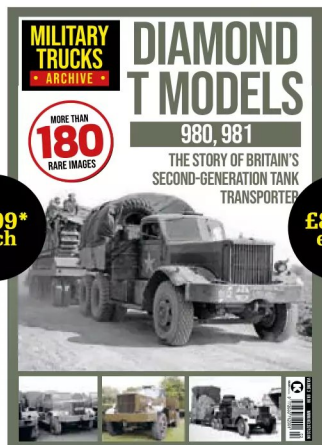
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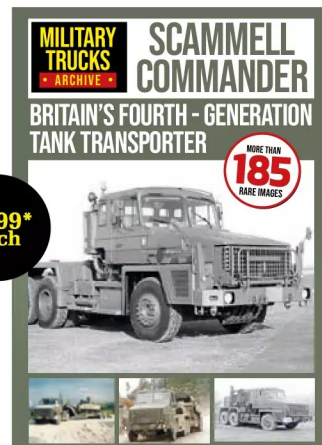
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● Although early examples, and some of those built for the RAF, were petrol-engined, the iconic WW2 Matador was diesel-powered, and was easily recognised by its distinctive cab roof. Most were bodied as medium artillery tractors, but other variants were produced, including cargo vehicles. (Simon Thomson)

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Compiled and written by Pat Ware with source material from the Warehouse Archive, Phil Moth, Simon Thomson, and AEC Limited.

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INTRODUCTION

AEC on the front line

AEC can trace its origins back to 1909 when it was established to build bus chassis for the London General Omnibus Company (LGOC). The company's first bus was the X Type, designed by Frank Searle. The iconic B Type followed soon after. By 1912, the LGOC had been taken over by the Underground Electric Railways Company, and a separate company was established, based in Walthamstow, for the manufacture of buses... and eventually trucks. Known as the Associated Equipment Company, and almost immediately abbreviated to simply 'AEC', the company was the major supplier to the Underground Group, but was also free to trade on the open market. In its heyday, AEC enjoyed a worldwide reputation for the quality of its trucks and buses, and had manufacturing plants in a half-dozen countries.



In 1914 AEC started to diversify into commercial vehicles, eventually producing some 9000 examples of the Y Type 3-ton truck, which was based on the X Type bus chassis. Many of these trucks were supplied to the War Office during the Great War.

The company formed an alliance with Daimler in 1926, as the Associated Daimler Company, but this was

disbanded the following year when AEC moved to a new plant at Southall. During August 1928, AEC appointed George John Rackham as Chief Engineer and Designer. Aged 41 when he joined the company – for the second time! – Rackham had previously worked with Eustace Tennyson d'Eyncourt, Chairman of the so-called Landships Committee, on the design

● Making its first appearance in March 1915, the Y Type, together with its YA, YB and YC derivatives, was the most successful of AEC's early commercial vehicles. More than 8800 examples were eventually constructed. (Phil Moth)

of the first tanks. In 1926 he had been employed as Chief Engineer at Leyland Motors before joining AEC and during WW2 he served on the Ministry of Supply's Tank Design Committee.



Working with the Ricardo company, Rackham produced AEC's first diesel engine, an 8100cc (494in³) six-cylinder unit, in 1930, quickly up-grading it to 8810cc (538in³). Subsequent versions were produced with capacities of 5300cc, 6610cc and 7710cc (323in³, 403in³, and 470in³), with the latter becoming the company's standard power unit for many years. The 6610cc (403in³) engine was fitted to the 6x4 Marshal, examples of which were supplied to the military between 1931 and 1941, bodied both as cargo and bridging vehicles.

In 1932, AEC took a controlling interest in the British subsidiary of the American Four Wheel Drive (FWD) Company, whose products were marketed under the name Hardy to avoid confusion with American-built vehicles. Production ceased about 1936 but not before the FWD R6T, also known as the AEC 850, had

● The first example of the FWD R6T artillery tractor was delivered in April 1929. A total of 61 further examples were produced between 1929 and 1936, mostly as the AEC Model 850 following the take-over of FWD Motors in mid-1932. A number were equipped with a hinged jib for use in the recovery role.



● Often described as 'the best tractor in the medium class in either of the opposing armies', some 10,411 examples of the Model 853/O853 Matador were produced between 1938 and 1958, with 791 built during the post-war period. As with this example, most were bodied for the medium artillery tractor role. (*Simon Thomson*)

INTRODUCTION

been specified by the British Army, with 61 examples entering service, in both the artillery tractor and breakdown recovery vehicle roles.

The iconic Matador, which was derived from work originally carried out at Hardy Rail Motors, appeared in 1938, originally with a petrol engine, but subsequently as a diesel, and a total of more than 10,000 examples were produced. The versatile Matador chassis went on to prove itself to be one of the best Allied trucks of WW2, and was adapted to 6x6 configuration by using the Marshal rear bogie, as well as providing the basis for a heavy armoured car, and 4x4 and 6x6 armoured command vehicles. After the war, surplus Matadors proved popular with timber contractors, heavy recovery outfits, and fairground proprietors.

Old-established names Maudslay and Crossley were both absorbed into AEC in 1948, and although the vehicles continued to be badged as AEC, the company name was changed to Associated Commercial Vehicles (ACV) Limited. Park Royal and Charles H Roe were both acquired the following year, and during the 'fifties, AEC enjoyed a decade of expansion, with plants opened in Belgium, Portugal, South Africa, South America and Spain.



● After the end of WW2, large numbers of Matadors remained in military service: others enjoyed long second careers, typically, bodied as recovery tractors, or for forestry work. This example was photographed serving with West Yorkshire Metro. (Phil Moth)



● Photographed at the Atwell-Wilson Motor Museum in Calne, Wiltshire, this Model O854 refuelling tanker is said to have been used during the run-up to the Squadron 617 Dambusters raid. No longer at the museum, it was sold into private hands in 2011.



● Dating from 1954, and photographed outside AEC's Southall works, this post-war Militant Mk 1 FV11002 artillery tractor has the more unusual curved rear mudguards.

The first specialised military product of the post-war period was a replacement for the Matador. Rated at 10 tons (10,180kg), the six-wheeled Militant was bodied for use as a cargo or tipper truck, tractor for semi-trailer, aircraft refuelling tanker, artillery tractor, and mobile crane, with an eventual 3000 examples supplied. A much-improved Mk 3 Militant appeared in 1966, for the heavy recovery and cargo roles.

Mandator chassis were supplied to the British Army in the early 'sixties, a number equipped with a unique cab and body for use as a transporter for the Blue Steel missile, with others used as tractors for semi-trailers. The standard commercial Mammoth Major was used by all three services as a cargo truck, and as an aircraft



● During WW2, both the 4x4 Matador and 6x6 Model 853/O853 chassis were used as the basis for an armoured command vehicle. The vehicles were used for the first time in North Africa where they were rapidly nicknamed 'Dorchester'.



● The Militant Mk 3 medium recovery vehicle (FV11044) first appeared in 1970 and may well have been AEC's last purpose-built military vehicle.



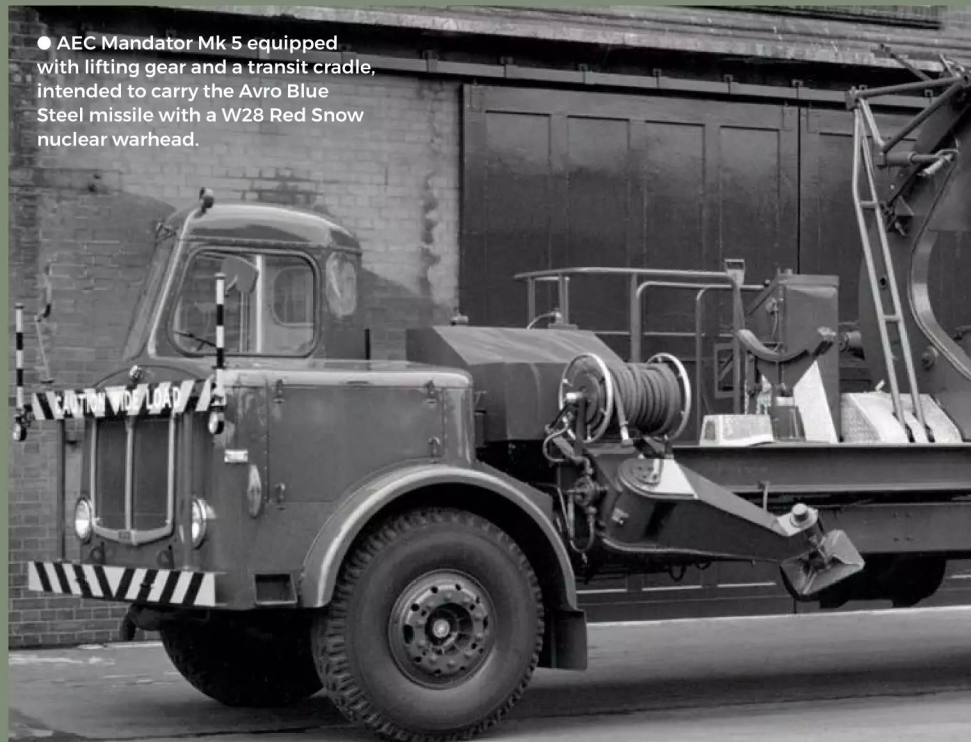
refueller, and was produced in both 6x2, 6x4 and 8x4 configurations. Other AEC military vehicles of the period were drawn from the Mercury and Monarch families, and the name Marshal was also resurrected, reappearing on a Motor Panels cabbed mobile oxygen plant.

But the days of the specialised AEC military vehicle had come to an end... and the name AEC was also soon to disappear.

In 1961, Transport Equipment (Thornycroft) was absorbed into the ACV group, and, during August of the following year, ACV itself was taken over by Leyland. AEC's overseas' interests were gradually closed down, and the use of the name AEC was discontinued in 1977, with little ceremony, and all subsequent products were identified as Leyland. Two years later, on 25 May 1979, the Southall plant closed its doors for the last time. The factory was demolished in 1981 and the 63-acre (25 hectare) site was used to construct the Great Western Industrial Park... and that was the end of AEC! It wasn't

● In 1939, some 32 examples of the AEC Regal 10T10 were passed from London Transport, where they had been employed on the Greenline network, to the American Red Cross, where they were refitted with a kitchen, lounge and service counter designed to dispense coffee and doughnuts to US servicemen.

● AEC Mandator Mk 5 equipped with lifting gear and a transit cradle, intended to carry the Avro Blue Steel missile with a W28 Red Snow nuclear warhead.





● It is believed that just 16 examples of the half-cab Mandator were produced for carrying the Blue Steel missile. This example, complete with dummy missile, is on display at the RAF Museum in Hendon. (Phil Moth)



● Low-profile air-portable AEC Mercury refuelling unit (FV12381); the cab top and the steering wheel were removable. Zwicky pumping equipment was installed behind the cab, and the tank held 2200 gallons (9988 litres).

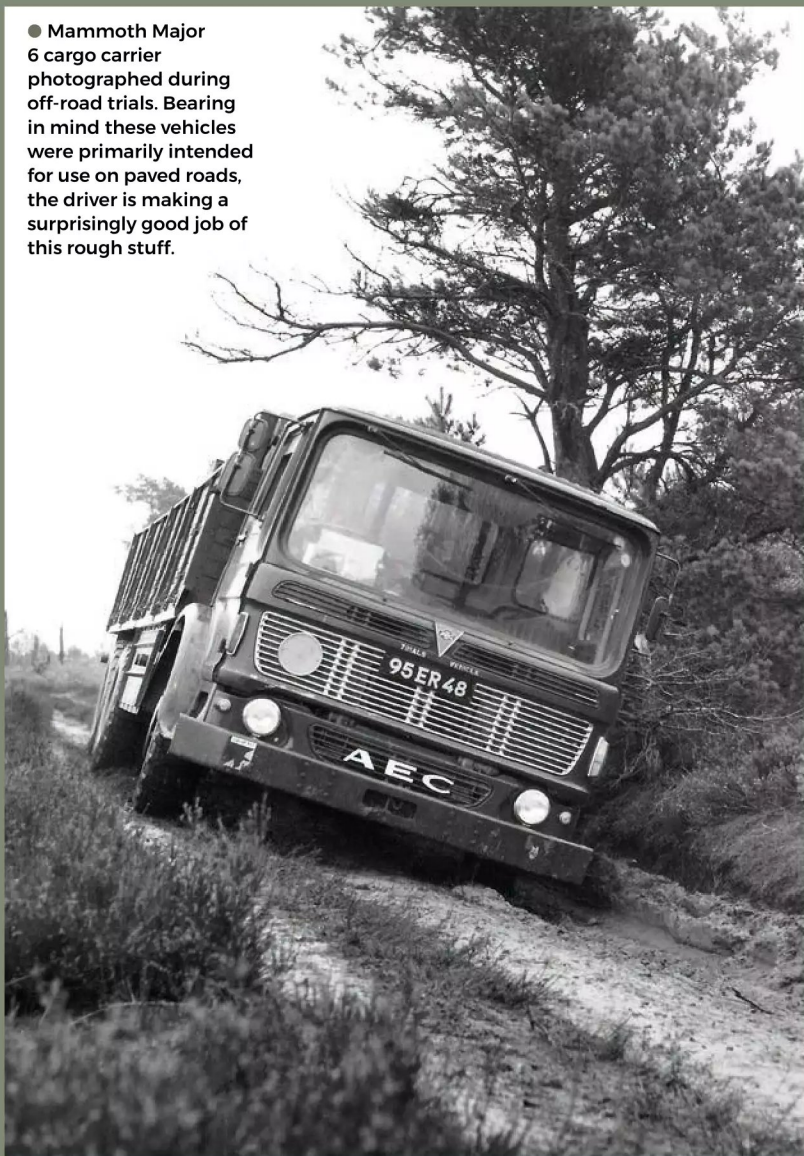


● Ergomatic-cabbed Mammoth Major Six road-going 4000-gallon (18,160 litres) fuel tanker belonging to the RAF. (Phil Moth)

AEC MILITARY VEHICLES, 1915-79

Date	Model	Typical description	Engine
1915	Type Y, YA, YB, YC	Truck, 3 ton, cargo, 4x2	Daimler, 5700cc; Tylor JB4, 7720cc
1929	FWD R6T, Model 850	Tractor, 6x6, medium artillery; recovery	Dorman JUP, JUP, 6597cc; AEC A136, 6126cc
1932	Marshal, Model 644	Truck, 3 ton, bridging; cargo; searchlight; signals	AEC A139, 5123cc
1939	Matador, Model 853, O853	Tractor, 4x4, medium artillery; anti-aircraft; flat platform; GS cargo; air traffic control; signals	AEC A193, 7400cc; AEC A173 or A187, 7580cc
1940	Model 854/O854	Truck 5 ton, 6x6, crane; truck 10 ton, 6x6, 2000/2500 gal refuelling; oxygen/nitrogen plant	AEC A193A, 7400cc; AEC A196A, 7580cc
1940	Model O853	Armoured command vehicle, 4x4; demolition vehicle; mine-laying vehicle; personnel carrier	AEC A187, 7710cc
1940	Model O857	Armoured command vehicle, 6x6	AEC A198, 9636cc
1940	Cockatrice, Basilisk, Model O854	Flame-thrower, heavy pump unit, 6x6	AEC A196, 7580cc
1941	Model O855, O856	Armoured car, 4x4, Mk 1, Mk 2, Mk 3	AEC A195, 7710cc; AEC A197, 9636cc
1942	Deacon SPG, Model O853	Gun carrier, 6-pounder	AEC A173, 7580cc
1952	Militant Mk 1, Model O859, O860	Truck, 10 ton, 6x4, 6x6, anti-aircraft; crane; tipper; tanker; tractor for semi-trailer; artillery tractor; etc	AEC A223, 11,310cc
1960	Militant Mk 2, Model O860	Truck, 10 ton, 6x6, GS cargo; medium artillery tractor	AEC 2AV690, 11,310cc
1966	Militant Mk 3, Model O870, O880	Tractor, 10 ton, 6x6, medium recovery; truck, 10 ton, 6x6, cargo	AEC AV760, 12,470cc

● Mammoth Major 6 cargo carrier photographed during off-road trials. Bearing in mind these vehicles were primarily intended for use on paved roads, the driver is making a surprisingly good job of this rough stuff.



ABOUT THE AUTHOR

Pat Ware has been a professional writer for more than 50 years. He is the author of more than 60 vehicle-related titles, and has specialised in military-vehicle subjects since 1995. His expertise is recognised worldwide, and his books have been translated into a half-dozen languages. This title is the sixth in the 'Military Trucks Archive' series, the first five titles covering five generations of British tank transporter.



In 2001, he was the founding editor of the UK's leading military-vehicle magazine, *'Classic Military Vehicle'*, and he continues to contribute to respected military-vehicle journals in the USA and France. In 2015 he contributed to a 10-part TV show, *'War on Wheels'*, for China Central Television.

His eclectic interests have also led to the publication of titles on subjects as diverse as the Cold War, commercial haulage, and iconic agricultural tractors.

long before the whole British truck industry went the same way, because, by 1987, Leyland had undertaken another merger, taking a 40% interest in Leyland-DAF before that enterprise, too, went into receivership in 1993.

The bankruptcy was followed by a management buyout in the same year, when the company became known as Leyland Trucks Limited. This enterprise, in turn, was acquired by the American Paccar company in 1998, and between 2000 and 2006, the Leyland plant assembled Foden trucks. When the name Foden was retired, all subsequent production was identified with the DAF badge, the name now owned by DAF Trucks Limited, a division of Paccar Inc.

...and, with the demise of ERF in 2007, that was the end of the British truck-building industry!

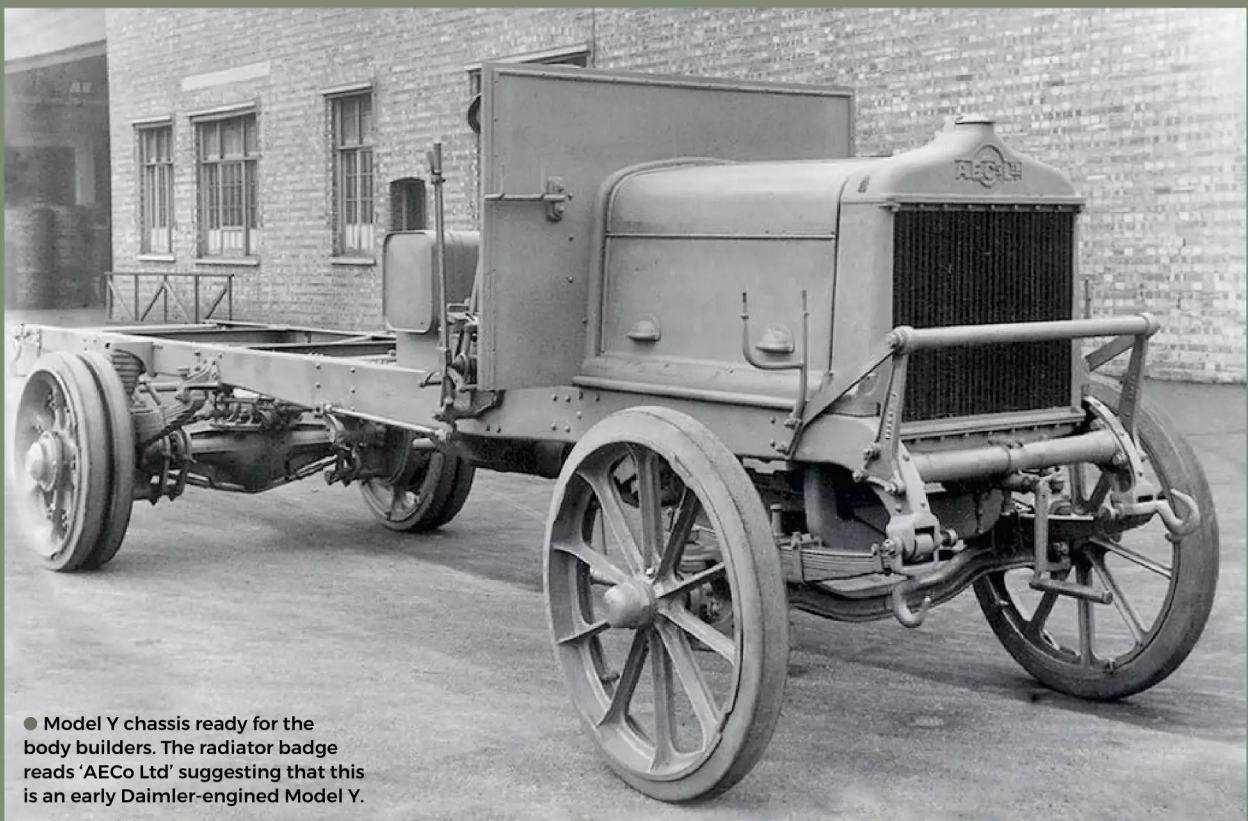
● Dating from 1970, this road-going RAF Mercury 4x2 tractor unit is coupled to a low-loader semi-trailer carrying a Harrier fuselage exhibit. (Phil Moth)



MODELS Y, YA, YB, & YC

AEC in the Great War

The most successful of AEC's early commercial vehicles was the Y Type, together with its YA, YB and YC derivatives. However, despite making its first appearance in March 1915, the 3-ton Y Type was actually not the company's first commercial vehicle. It had been preceded by the W and X Types, both of which were derived from the 3-ton B Type. The W Type had a more robust front axle and heavier-duty wheels; the X Type was effectively a W Type with heavy-duty rear hubs; and, finally, the Y Type was a lower-geared version of the W Type. All three types were constructed to the requirements of the War Office, with the majority of the trucks supplied to the military being of the Y Type pattern.



● Model Y chassis ready for the body builders. The radiator badge reads 'AEC Co Ltd' suggesting that this is an early Daimler-engined Model Y.

At the beginning of 1914, AEC reached a five-year agreement with the Daimler Company whereby Daimler was responsible for all sales of AEC products except those that were supplied to the LGOC, which by this time had been taken over by the Underground Group.

The outbreak of war in July 1914 saw an increase in production at

Walthamstow and by 1915 two additional four-storey machine shops were under construction, and, within a year, war production dominated the company's output. Previously described as a 'government-controlled establishment', on 30 June 1916, the AEC factory was placed under direct government control, and, from that date the chassis were no

longer supplied through Daimler and, although the hump-shouldered Daimler radiator remained, the vehicles were identified as 'AEC' – well, originally as 'AEC Co Ltd' before the simplified form was adopted. A 265-foot (8.08m) long moving production line was installed in 1917 when the factory was extended again by the addition of a new assembly shop. This helped to raise output from



● Army Service Corps drivers – the ‘Royal’ prefix was not appended until 1918 – posing with typical WWI transport vehicles... second and third vehicles in the line are AECs. In 1915, ‘motor drivers’ were paid a basic rate of 30p a day!

30 to 45 chassis per week by the end of 1917. It was March 1915 when the first Y Type appeared, and it was, at first, powered by the same type of engine that was used in the B Type – a complex four-cylinder Daimler ‘Silent Knight’ sleeve-valve unit of 5700cc (348in³) producing 40bhp (30kW). The engine was coupled to the rear wheels via a four-speed gearbox and worm-drive rear axle. All four wheels were shod with solid tyres. In January 1917, the Daimler engine was replaced by a 7720cc (471in³) four-cylinder Tylor JB4 standardised military unit, producing 49bhp (37kW), and the model designation of the chassis became YA to signify the change. JB Tylor was based in London’s King’s Cross, and, as well as manufacturing petrol engines, advertised themselves as sanitary engineers, brass founders, and pump manufacturers! The same type of engine was used in the Whippet tank, and examples were also manufactured under licence by Guy Motors.

By 1917, AEC had constructed 2799 Y and YA Types, 939 of which had been supplied to the War Office. The designation was subsequently changed



● Post-war Model Y, almost certainly ex-War Department, in service with the Midland Railway Company.

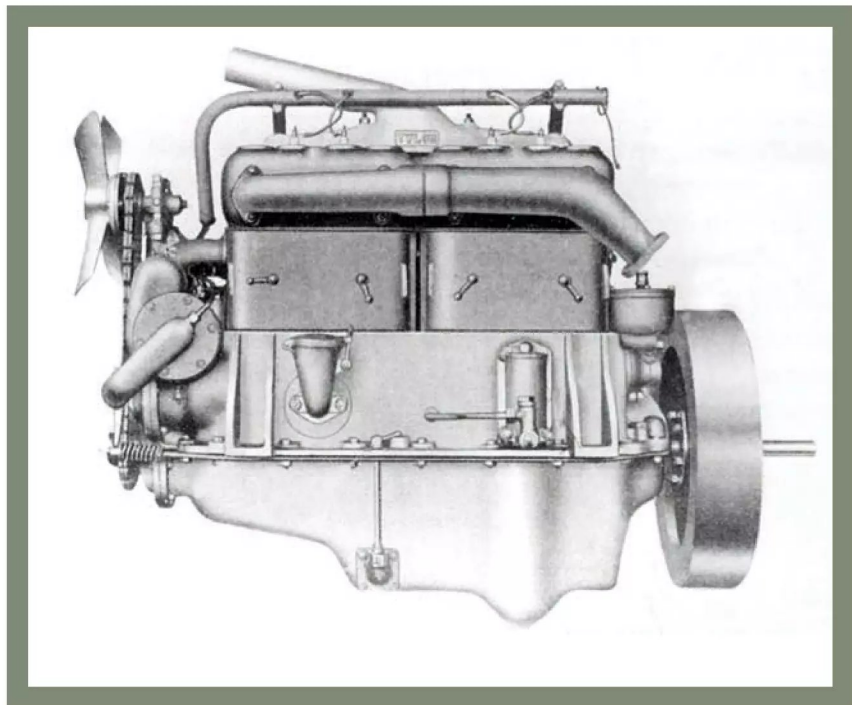
to YB to indicate the adoption of a pressed-steel frame, and then to YC to indicate the use of a David Brown worm-gear final drive. By March 1918, the factory was turning out 20 Y Type chassis a day and the company had received orders for 7750 trucks from the War Office.

With its fixed-side timber body, cast wheels, open cab and rudimentary weather protection, the Y Type was a typical military cargo vehicle of the period, although there were also other variants. It was probably the best-known of the British wartime trucks, with some sources suggesting that the Y

MODELS Y, YA, YB, & YC

Type might have represented as much as 40% of the total of 3-4 ton British military vehicles of the period. It was also used by the US Expeditionary Force in France. By the time of the armistice in 1918, AEC had built 8821 examples of all of the Y Type variants, of which 5,200 had been equipped with the Tylor JB4 engine. Production continued after the end of the war, and the War Office purchased a further 822 Y Types during 1919. The vehicle also continued to sell to commercial customers through 1919 and into 1920, by which time it was priced at a hefty £1300, and it remained in production until 1922, with some modifications.

It is also interesting to note that, in order to protect the company's profits in the face of a flood of ex-military vehicles onto the commercial market, AEC acquired several hundred surplus



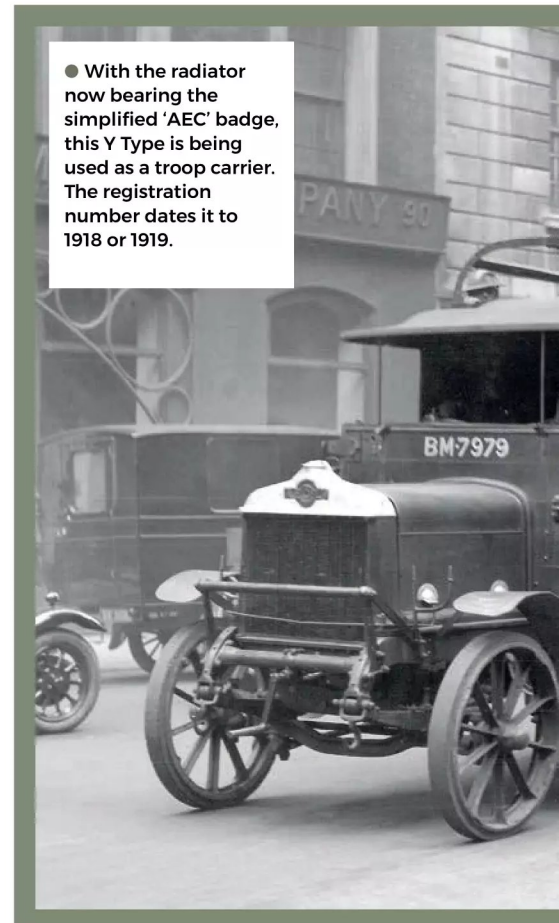
● First fitted in 1917, the Tylor JB4 7720cc (471in³) four-cylinder engine replaced the original Daimler power unit. At the same time, the model designation was changed to YA.



● Constructed by Roadless Traction in 1926, this experimental half-track was based on a Y Type chassis. It wound up in Australia.



● The enlisted man standing beside the truck gives an idea of the size of these early vehicles. (Phil Moth)



● With the radiator now bearing the simplified 'AEC' badge, this Y Type is being used as a troop carrier. The registration number dates it to 1918 or 1919.



● The fixed-sided wooden cargo body of the Y Type was rated at just 3 tons.

Y Types from the government in the 'twenties, subsequently refurbishing and selling them... at a significant loss! Many ex-military Y Types also passed to civilian operators, where the standard military body was frequently removed and the vehicle converted to a single-decker bus... some were even pressed into service by the LGOC with little more adaptation than the installation of a staircase at the rear and seats in the cargo body! At least one example was converted to a half-track configuration by Roadless Traction of Hounslow in 1926, before being shipped to Australia



● One of a batch of 150 2-ton trucks constructed for the Russian government in January 1917. Based on either the Y Type or the B Type bus, these trucks were identified as either Z Type or as 'Russian B'. Note the heavier cast wheels that were presumably necessary in order to cope with poor Russian roads.

for off-road demonstrations. Parts for the Tylor JB4 engine remained available well into the 'twenties, but the development of pneumatic tyres for heavier vehicles in the mid-twenties saw many ex-military Y Types being abandoned as obsolete.



TECHNICAL SPECIFICATION

Production: 1915-22.

Automotive details

Engine (Y Type): Daimler; 5700cc (348in³); four cylinders in-line; bore and stroke, 96x130mm; petrol; sleeve valves; power output, 40bhp (30kW) at 1300rpm.

Engine (YA, YB, YC Type): Tylor JB4; 7720cc (470in³); four cylinders in-line; bore and stroke, 125x150mm; petrol; side valves; power output, 49bhp (37kW) at 1300rpm.

Transmission: 4FIR; 4x2.

Suspension: live axles on semi-elliptical multi-leaf springs; solid tyres.

Brakes: mechanical, rear wheels only.

Electrical system: magneto only.

Dimensions

Length, 282in (7163mm); width, 83in (2108mm); height, tilt in place, 122in (3099mm).

Wheelbase: 171in (4343mm).

Weight: unladen, 9492 lb (4315kg); laden, 16,212 lb (7369kg).

Performance: maximum speed, 12mph (20km/h).

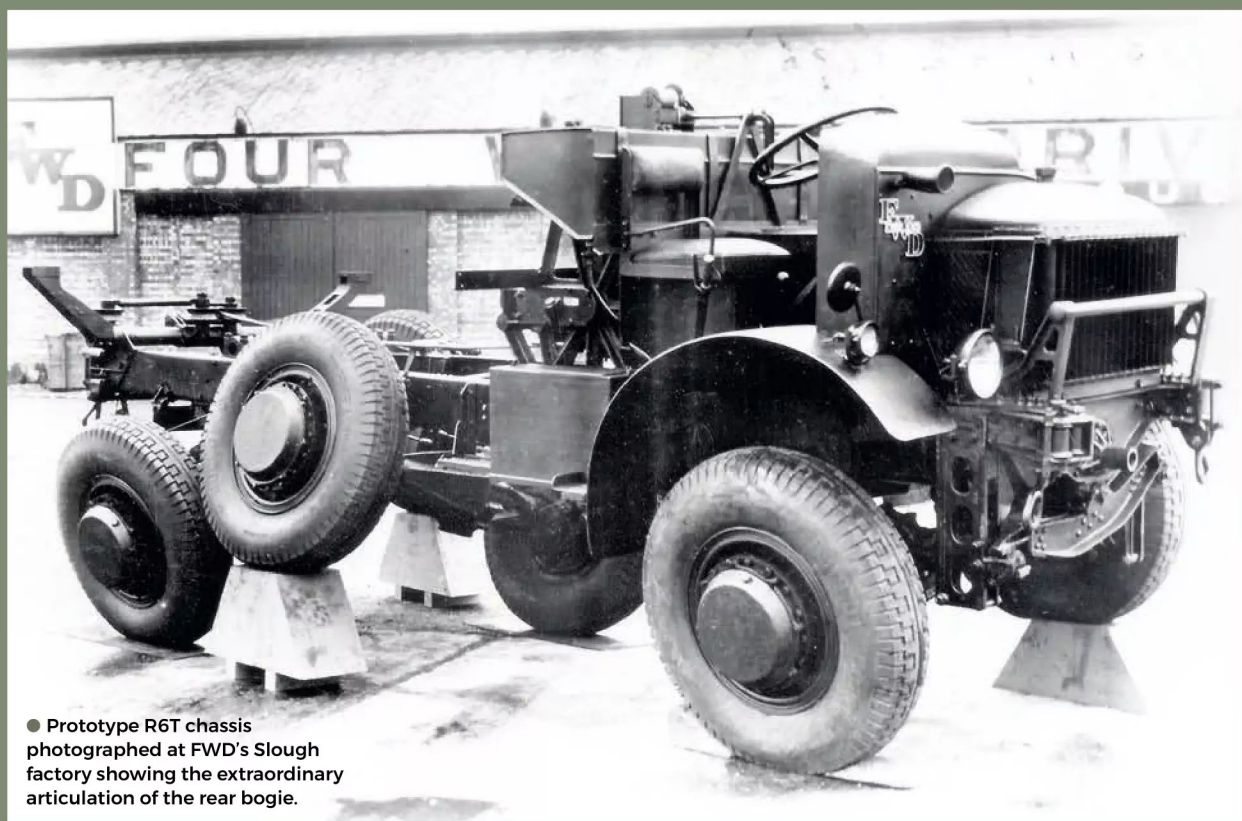
Variants

Truck, 3 ton, cargo, 4x2

MODELS R6T & 850

An all-wheel drive artillery and recovery tractor

The FWD, later AEC, 6x6 artillery tractor was trialled for the Royal Artillery in 1929 as a possible replacement for the Hathi tractors which were proving unequal to the task of towing heavy anti-aircraft guns. The Hathi tractor had originally been assembled by the Royal Army Service Corps (RASC) using parts of captured German 4x4 machines, and 24 examples were manufactured by Thornycroft. In 1927 the RASC workshops experimentally added a second rear axle to a Hathi tractor to give a 6x6 configuration, and put this through a series of trials along with an unusual 8x8 tractor produced by Armstrong-Siddeley. Neither proved satisfactory, but the concept of six-wheel drive was proven beyond doubt.



● Prototype R6T chassis photographed at FWD's Slough factory showing the extraordinary articulation of the rear bogie.

In 1926 FWD Hardy Motors had submitted an experimental half-track vehicle to the Mechanical Warfare Experimental Establishment (MWEE) for possible use as a gun tractor. The vehicle was based on the American FWD chassis using a Roadless tracked bogie at the rear, and there appear to have been two versions, one with drive to the front axle and one

without. Unfortunately, the MWEE deemed that it was underpowered and slow.

Two years later, in 1928, the War Office approached four companies with a view to purchasing a new 6x6 gun tractor. The companies involved were Guy, Leyland, Scammell and FWD, all of whom were asked to submit six-wheel drive tractors which could

provide roughly 50% more drawbar pull than the Hathi.

Guy had already produced a suitable 6x6 tractor for use in India, and the War Office thought that there was little point in acquiring further examples. Scammell and Leyland were said to be 'proceeding slowly' with their designs. The Scammell design - which of course evolved into the highly-capable Pioneer

● Another FWD factory view showing the large engine-driven winch located behind the cab.



● FWD R6T artillery tractor, dating from 1929, showing the huge hubs housing the planetary spur-gear system. Note the rudimentary weather protection, and the twin spare wheels carried behind the cab.

- although 'attractive', was deemed too costly, and the Leyland seems never to have materialised. However, the fourth machine came from the FWD Lorry Company who, it was said, had 'considerable experience with front-wheel drive'.

The FWD Lorry Company was formed in 1929, in Slough, as the successor to the British Four Wheel Drive Tractor-Lorry Company (1918-20), and the Four Wheel Drive Tractor-Lorry Engineering Company Limited (1920-29). Although there appears to have been little financial connection between the British and American FWD companies, the British organisation had been established by Charles Frank Cleaver, a former designer at AEC, to rebuild Great War surplus American FWDs.

As the supply of war surplus vehicles dried up, FWD began to construct a range of home-grown products and the R6T, on which development started in 1927, was the first six-wheel drive

● Artillery tractor in service, complete with crew, together with a towed 3in 20cwt QF anti-aircraft gun. The weapon on the back of the tractor is a Lewis 0.303in machine gun, more generally used as an aircraft-mounted weapon.



● Now with a simple steel body in place of the former composite timber design, this R6T artillery tractor shows what it can do across the rough stuff.

machine and was possibly the first of what might be described as a modern artillery tractor. It was powered by a six-cylinder Dorman JUL or JUP side-valve engine producing 78bhp (58kW) from 6597cc (403in³), driving all six-wheels through a four-speed gearbox, two-speed transfer case and planetary spur-gear axles. Front suspension took the form of a novel centre-pivoted beam with steel sliders at the spring ends

to ensure axle location, whilst at the rear, the pivoting bogie was capable of extraordinary degrees of articulation.

There was a rudimentary cab, of the forward-control pattern, lacking sides and a windscreen, but with a large



canvas cover which could be erected to provide some degree of weather protection. There does not appear to have been any rear bodywork at this stage, on what was, essentially, a prototype, although a huge 7-ton mechanical winch was installed behind the cab.

A single timber-bodied FWD R6T tractor, which was similar in design to the prototype, was delivered to the War Office in April 1929.

For the production vehicles, the curved front mudguards of the prototype were replaced by simple angular items, constructed from flat sheet metal. The co-driver was seated sideways on a small seat on the left-hand side of the engine compartment, using the front mudguard as a footrest. The twin spare wheels were moved from their transverse position behind the cab to side mounts. An open-backed steel-panelled body was now fitted at the rear, which provided seating for the gun crew on longitudinal benches. A rearward-facing folding top was also provided for the rear compartment.

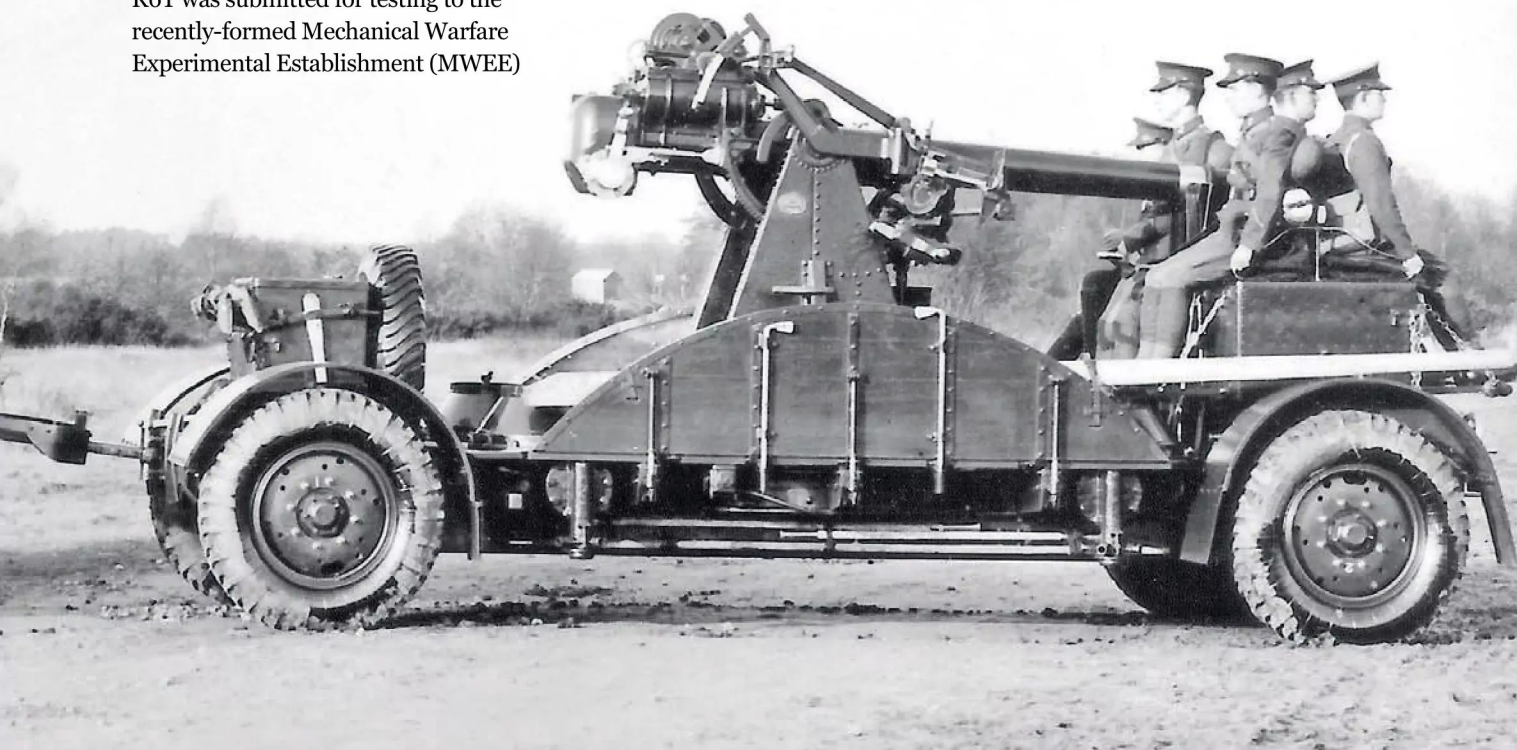
Period photographs show the tractor coupled to the QF 3in 20cwt anti-aircraft gun on a four-wheeled trailer mount. An example of the R6T was submitted for testing to the recently-formed Mechanical Warfare Experimental Establishment (MWEE)



● AEC Model 850, with anti-aircraft gun, taking part in what looks to be a victory parade. Note the civilian registration, a London series first issued in 1930.



● AEC Model 850 recovery vehicle, pulling a Morris-Commercial 15cwt truck out of the ditch.





● The production vehicles can be identified by the side mounting of the two spare wheels and the angular front mudguards. Note the manual recovery winch.

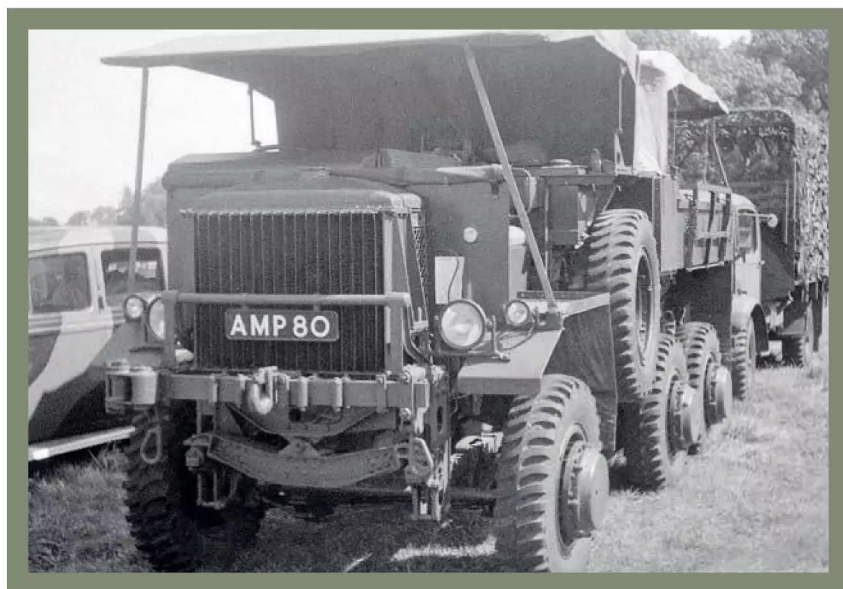
which had taken over the experimental work previously carried out on wheeled vehicles by the RASC. In its annual report for 1929, the Mechanization Board reported that the vehicle had 'proved to be highly satisfactory and was superior to the Hathi artillery tractor both as regards ease of manoeuvre, towing, winch work and running maintenance'. Inevitably, defects occurred during the trials, but these were either easily rectified, or were noted for improvements to a future design.

At the end of 1929, a contract was placed with FWD for nine further examples in which the original Dorman engine and gearbox were replaced with a 6126cc (374in³) AEC A136 overhead-valve unit driving through an AEC gearbox. A number of small changes were also made to both the cab and the body, most notably the addition of folding side racks.

FWD had been assisted in their work on the R6T tractor by Hardy Rail Motors Limited which had been established in November 1925 and was taken over by AEC in mid-1932, later trading as simply Hardy Motors. At the same time, AEC also acquired the FWD Lorry Company, and the R6T became the AEC Model 850... and Charles Cleaver, once more, found himself working for AEC. With



● Photographed in northern France in 1940, this AEC Model 850 is towing a universal carrier on its tracks, together with a Mk VI light tank on a four-wheeled trailer, with a helper axle.



Cleaver's design guidance, AEC built a further 52 examples of the Model 850 between 1932 and 1936, giving a production total of 61. As well as being used as an artillery tractor, a number were equipped with a hinged crane jib and hand winch for the recovery role and were used by the Royal Army Ordnance Corps (RAOC).

Some of these vehicles served in India in the years before WW2, and, at least one was photographed with the British Expeditionary Force (BEF) in France during 1939/40.

A single vehicle, registered AMP 80, has survived, and forms part of the historic vehicles collection at IWM Duxford. Unfortunately, the cylinder block has suffered frost damage.

The remnants of two others are also believed to still exist, with the owner hoping to be able to build one out of the two vehicles.

● Forming part of the IWM Duxford historic vehicles collection, this AEC Model 850 is the only complete example believed to still exist. However, it is said that there are the remnants of two others in private hands. (Phil Moth)



TECHNICAL SPECIFICATION

Production: 1927-36.

Automotive details

Engine (prototype): Dorman JUL or JUP; 6597cc (403in³); six cylinders in-line; bore and stroke, 100x120mm; petrol; side valves; power output, 78bhp (58kW).

Engine (production variants): AEC A136; 6126cc (374in³); six cylinders in-line; bore and stroke, 100x130mm; petrol; overhead valves; power output, 95bhp (71kW).

Transmission: 4F1Rx2; planetary hubs; 6x6.

Suspension: live axles, front and rear on semi-elliptical multi-leaf springs, transverse at front.

Brakes: compressed air.

Electrical system: 6V.

Dimensions

Length, prototype 226in (5740mm), production vehicles, 231in (5867mm); width, 90in (2286mm); height, to top of canvas 104in (2642mm).

Wheelbase, 120in (3048mm); bogie centres, 48in (1220mm).

Weight, unladen, 19,152 lb (8705kg).

Performance: maximum speed, 30mph (48km/h).

Variants

Tractor, 6x6, artillery

Tractor, 6x6, medium recovery

MARSHAL

A 3-ton 6x4 truck equipped for the cargo, breakdown, and bridging roles

The Marshal – often erroneously spelled as ‘Marshall’, even by AEC themselves – was one of the first AEC trucks to be given a name which began with ‘M’, a practice that had started in 1929. Also known as the Model 644, it was designed by Charles Cleaver to meet a 1931 War Office requirement for a 3-ton 6x4 chassis that was also capable of carrying 5 tons (5090kg) on good roads, and was based on components taken from the standard AEC 6-Type. Similar vehicles were also constructed by Albion, Crossley, Karrier, and Leyland, all of them to a more-or-less standard rigid six-wheeler design which incorporated the War Office patented semi-floating rear bogie that had been developed in 1928.

● The original 1932 trials programme for the Marshal included both bonneted (seen here) and forward-control configurations. Note the traction aid on the rear bogie, and the curious lack of windscreen glass in what is clearly a closed cab.



Two prototypes for the Marshal were unveiled in July 1932, one a conventional bonneted vehicle, the other with a forward-control configuration. Trials were carried out at Farnborough and in North Wales,

and, although the bonneted truck was not pursued, a contract for 24 forward-control vehicles was awarded to AEC, with the first production examples available in 1935. The quantity of vehicles on order was subsequently

increased from 24 to 32. The trials vehicle consisted of a chassis-cab, and was ballasted to simulate the weight of a body, but ten of the production trucks were to be equipped with a body for the cargo role, ten were fitted with

● Forward-control Marshal photographed during trials in North Wales. Limited production started in 1935, with the majority of the 900 or so vehicles constructed dating from 1939-41, when production ceased.



the so-called 'trestle and sliding-bay' body for carrying components of the folding-boat equipment (FBE), and six for the small box-girder bridge (SBG) which came into service in Mk 2 form in 1928, with the Mk 3 appearing in 1939. In addition, there were four vehicles designed for carrying the Number 3 wireless set, a medium-range 400W set on which development had started in 1929, and two for searchlight

equipment. A workshop body was also prototyped.

Power was supplied by a four-cylinder AEC A139 overhead-cam petrol engine, producing a governed 70bhp (52kW) from a capacity of 5123cc (313in³). The forward-control configuration meant that the engine was installed inside the cab between the two crew members. Drive was taken to the rear axles through a manual clutch,

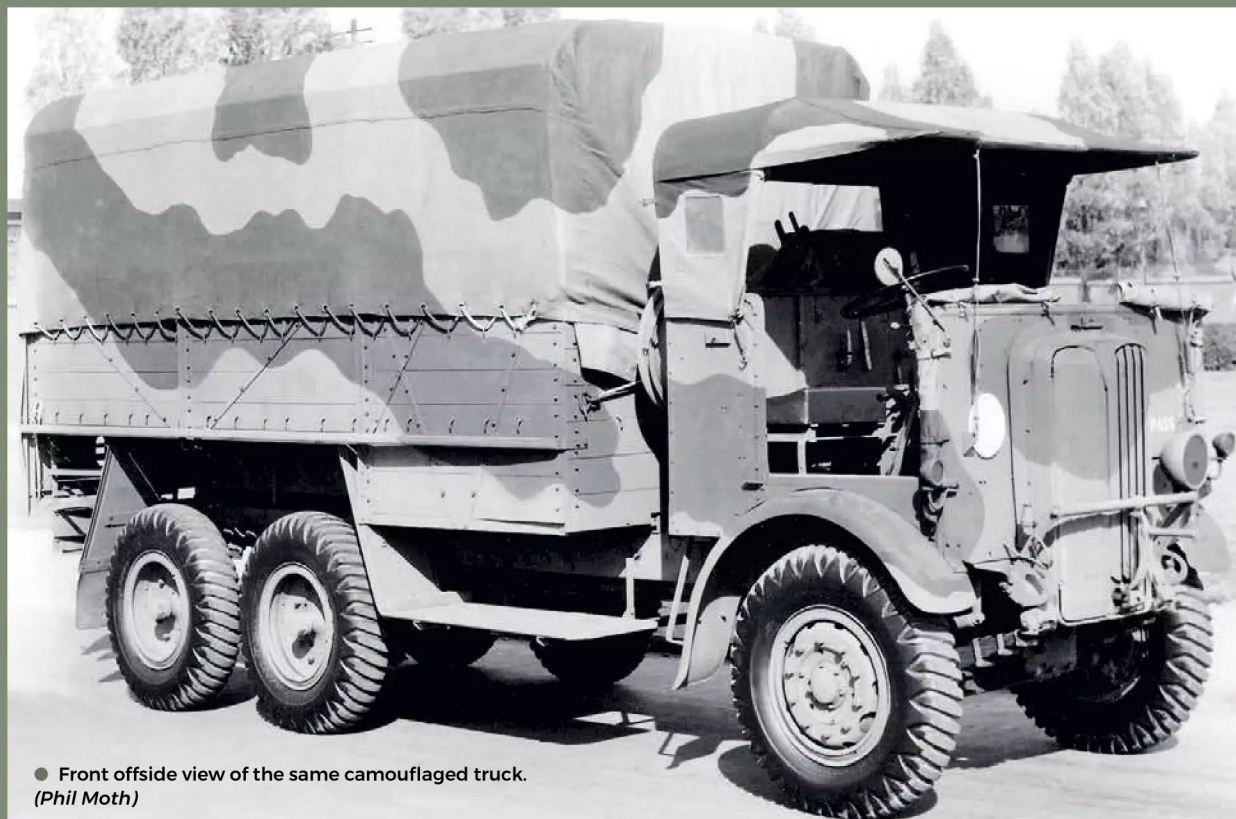
a four-speed main gearbox and a two-speed auxiliary 'box'. The suspension arrangements were thoroughly conventional and of the period, with a live axle at the front, suspended on multi-leaf semi-elliptical springs; the rear bogie was centrally-pivoted and suspended on inverted semi-elliptical springs. In a surprisingly modern touch, the brakes were servo-assisted hydraulic, and operated on all six wheels.

● AEC captioned this photograph as 'a convoy of AEC Marshal WD vehicles leave the Southall factory'. The leading vehicles are a mix of FBE (folding-boat equipment) and SBG (small box-girder bridge) variants.





● Front nearside view of an excitingly-camouflaged Marshal GS cargo variant... described by AEC as a 'general-purpose truck'.

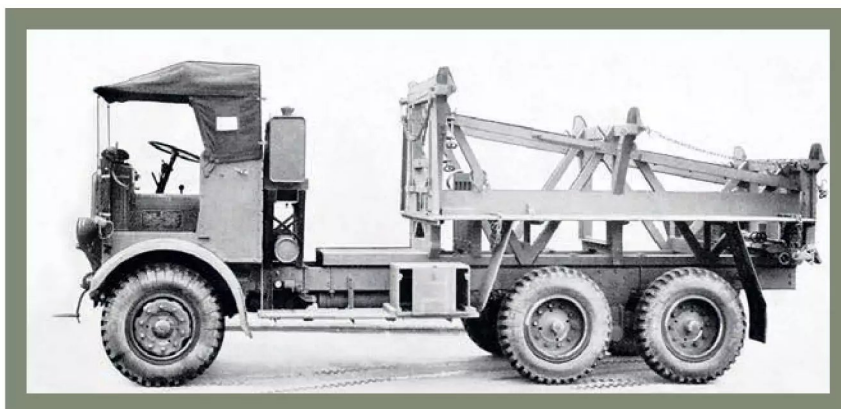
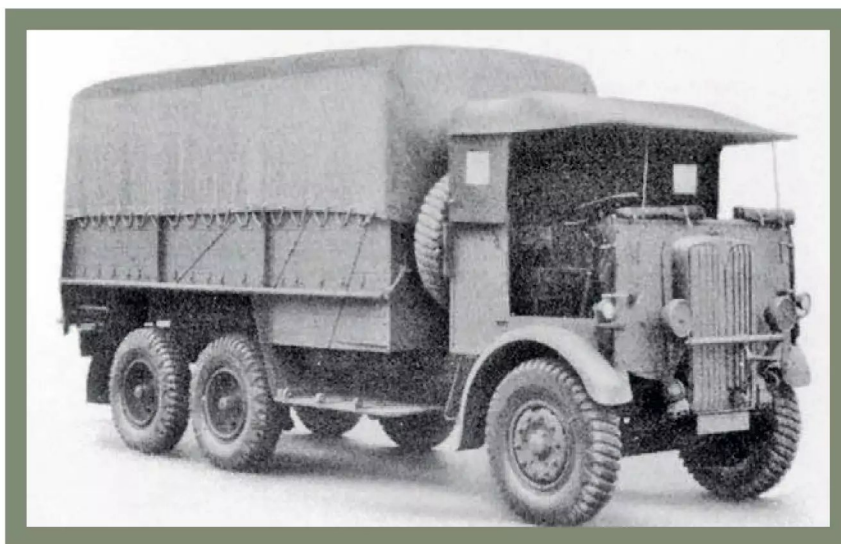


● Front offside view of the same camouflaged truck.
(Phil Moth)

● There are rolled-up tarpaulins attached to the bulkhead for the two-man crew, but this open cab, lacking even a windscreen, was typical of British military vehicles of the period... clearly the population was made of sterner stuff back then!

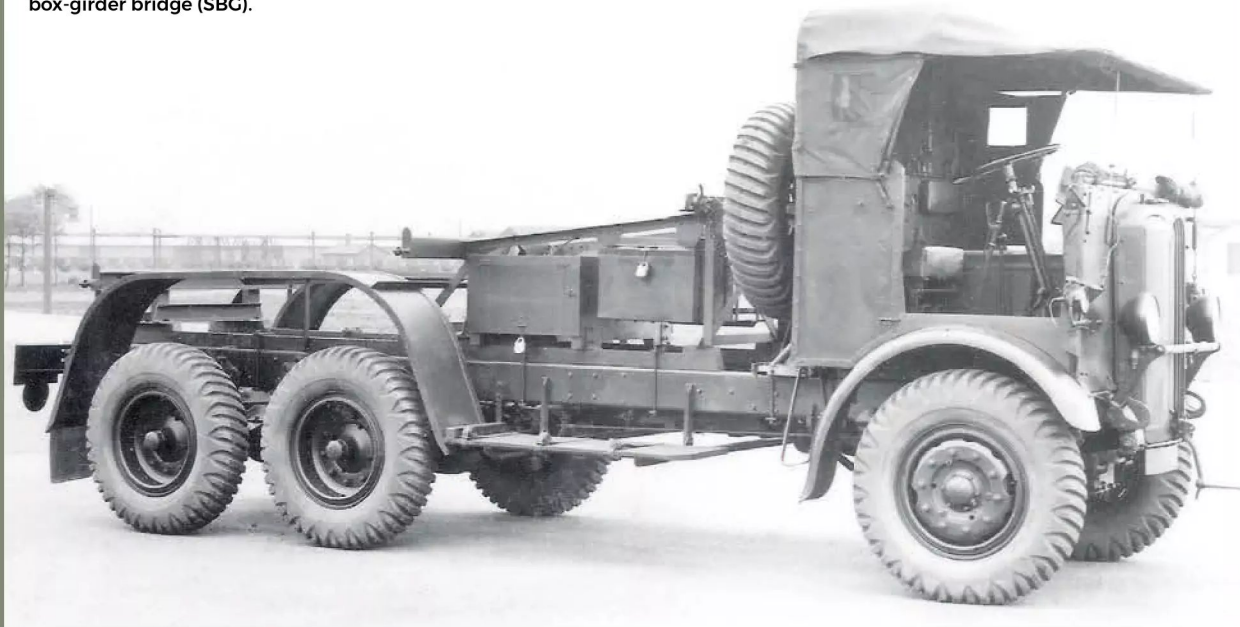
The cab was of typical open-fronted design, lacking doors, and with seating for two; some sources state that late production Marshals were fitted with aero screens or a full-width windscreen. A spare wheel and the fuel tank were carried between the cab and the rear body.

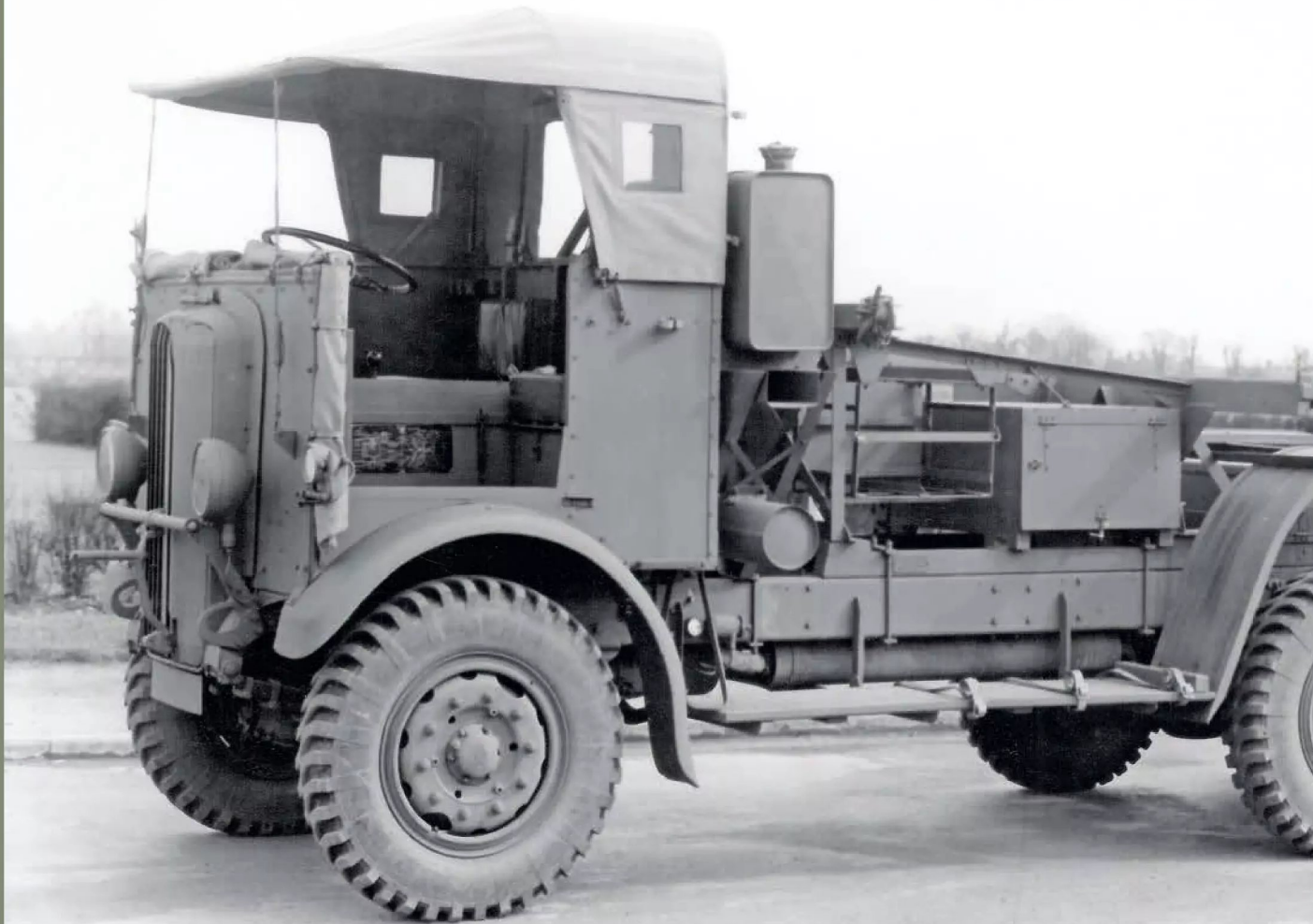
On the trestle and sliding-bay body, the bridge members were carried on long sloping steel bearers, with other, smaller components carried in a compartment at the forward area of the body or between the wheel arches; three folding boats were carried on a special trailer. The SBG body consisted of a sloping steel framework with three transverse supports and a stowage area behind the cab. Three trucks were required to carry one complete 64-foot (19.5m) bridge, one of which was a standard cargo vehicle carrying the deck panels and the stanchions, or ribands. The searchlight body was designed to carry a 900mm air-defence projector and a 24kW generator driven



● Marshal equipped with the trestle or sliding-bay body designed to carry the folding-boat equipment (FBE).

● Front offside view of a Marshal equipped for carrying the small box-girder bridge (SBC).





● Despite lacking front-wheel drive, and like similar trucks constructed by Albion, Crossley, Karrier, and Leyland, the Marshal was fitted with the War Office patented semi-floating rear bogie that was supposed to enhance off-road performance.

5992

via a power take-off on the gearbox; there was seating in the rear for a crew of eight, with access via hinged doors on either side. And finally, with its timber construction, fixed sides and a removable canvas cover, the 3-ton GS cargo body was typical of the period, and was similar to bodies fitted to other vehicles of the same type produced by other manufacturers.

Like the other 'rigid sixes', subsequent contracts also included

trucks for the breakdown and workshop roles. One vehicle was actually converted by men of the Royal Army Ordnance Corps (RAOC) into a mobile church, known as 'The Motor Church of Saint George'... a later version, bearing the same name was constructed on a Leyland Retriever chassis.

A total of more than 900 vehicles were built, with most supplied in the first two years of the war. Production ceased in 1941, and by this time, the

6x4 configuration was generally viewed as being obsolete, and was being superseded by 4x4 designs... and, with its open cab and simple canvas weather cover, the Marshal was very much a product of the 'thirties and always looked rather older than its years.

As its name might suggest, the Marshal was strictly produced for the military, and does not appear in period AEC literature. It is also relatively poorly-documented, often being



confused with the 6x6 Model 854/O854 variant of the Matador which used elements of the rear bogie of the Marshal. It doesn't help that the name Marshal was resurrected in 1960 for a range of six and eight-wheeled trucks, and continued in use, in the form of the Marshal Major until 1976... and some of these post-war Marshals were also used by the military.



● The Motor Church of St George in all its glory!

TECHNICAL SPECIFICATION

Production: 1932-41.

Automotive details

Engine: AEC A139; 5123cc (313in³); four cylinders; bore and stroke, 112x130mm; petrol; overhead valves; power output, 70bhp (52kW).

Transmission: 4F1Rx2; 6x4.

Suspension: live axles, front and rear on semi-elliptical multi-leaf springs, rear bogie centrally pivoted.

Brakes: hydraulic, with servo-assistance.

Electrical system: 6V.

Dimensions (cargo vehicle)

Length, 265in (6731mm); width, 90in (2286mm); height, to top of canvas 124in (3150mm).

Wheelbase, 128in (3251mm); bogie centres, 48in (1220mm).

Weight, unladen, 12,095 lb (5498kg); laden, 18,815 lb (8552kg).

Performance: maximum speed, 33mph (53km/h).

Variants

Truck, 3 ton, 6x4, trestle or sliding bay, folding-boat equipment (FBE)

Truck, 3 ton, 6x4, small box-girder bridge (SBG)

Truck, 3 ton, 6x4, GS cargo

Truck, 3 ton, 6x4, searchlight

Truck, 3 ton, 6x4, signals

MATADOR

A medium artillery tractor with a fearsome appetite for hard work

Often described as 'the best tractor in the medium class in either of the opposing armies', the AEC Matador Models 853 and O853 remained in production between 1939 and 1945, when some 9000 examples were built. It was put back into production in 1953, when a further 1900 were constructed for Britain and Pakistan. There is no doubt that the Matador had excellent cross-country performance, and proved itself to be a tough, reliable truck with examples remaining in military service until well into the 'seventies... and then going on to enjoy, often long, second careers in civvy street.

The development work on what became the Matador was originated by Charles Cleaver at Hardy Motors and arose out of the Hardy/FWD 4/4, a 4x4 GS military cargo truck rated at three, or possibly four, tons. Two examples of this truck, differing only in the tyre equipment fitted, were trialled by the War Department at Bagshot and in North Wales in 1931, where it was said to have

performed well. Aside from its four-wheel drive, it was a typically open-cabbed forward-control truck of the period and was badged 'Hardy' on what was a decidedly AEC-looking radiator.

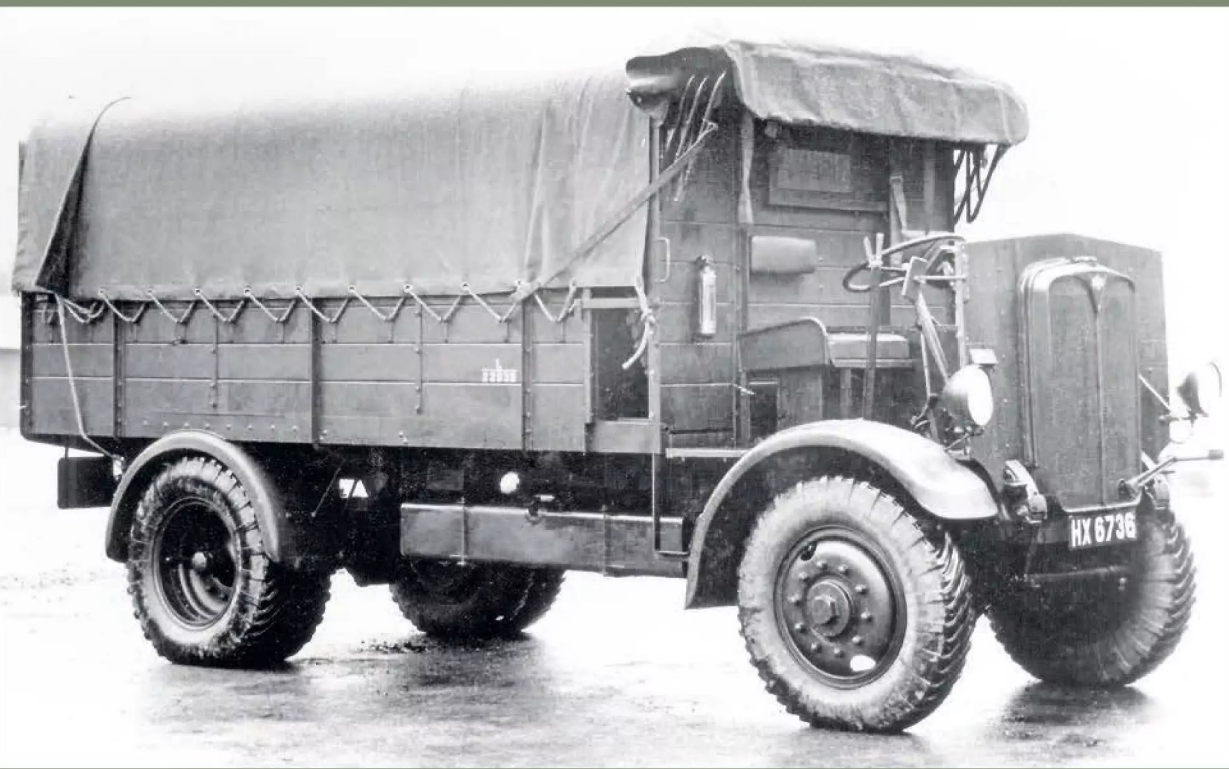
One further example was purchased at the end of the year.

When AEC purchased the shares in FWD in 1932, Cleaver found himself working at AEC again... and, indeed, remained there until his retirement in

1958. The work of the previous year continued, with a Matador Model 853 prototype appearing in January 1939 for delivery to the Mechanization Experimental Establishment (MEE) at Farnborough for military trials.

● The original Matador was a 5-ton 4x2 forward-control civilian truck, introduced in 1932 and, seen here, being trialled by the War Department.





● The military Matador arose out of Hardy Motors' work on an all-wheel drive truck that included elements of the civilian AEC Monarch (Model 344). Two examples were supplied in 1932, with one example following for extended trials with an RASC unit.

The Matador, which in some early AEC literature is referred to as the 'ForWarD', was pitched against a range of products from other manufacturers for use as a prime mover for the 3.7in heavy anti-aircraft gun, the 5.5in howitzer, or the 25-pounder (87.6mm) field gun. In the trials, the Matador acquitted itself well, and would clearly have bridged the gap between the Morris-Commercial artillery tractor and the much larger Scammell Pioneer R100.

A contract for 200 artillery tractors, was awarded to AEC immediately following the trials, and the first production chassis appeared in November 1939. The majority of the production vehicles – identified by the 'O' prefix to the model designation, indicating an 'oil', or diesel, engine – were powered by AEC's 'toroidal' diesel engine, a 7580cc (463in³) six-cylinder unit producing 95-105bhp (71-78kW), but a total of 167 examples were also petrol-engined, some apparently

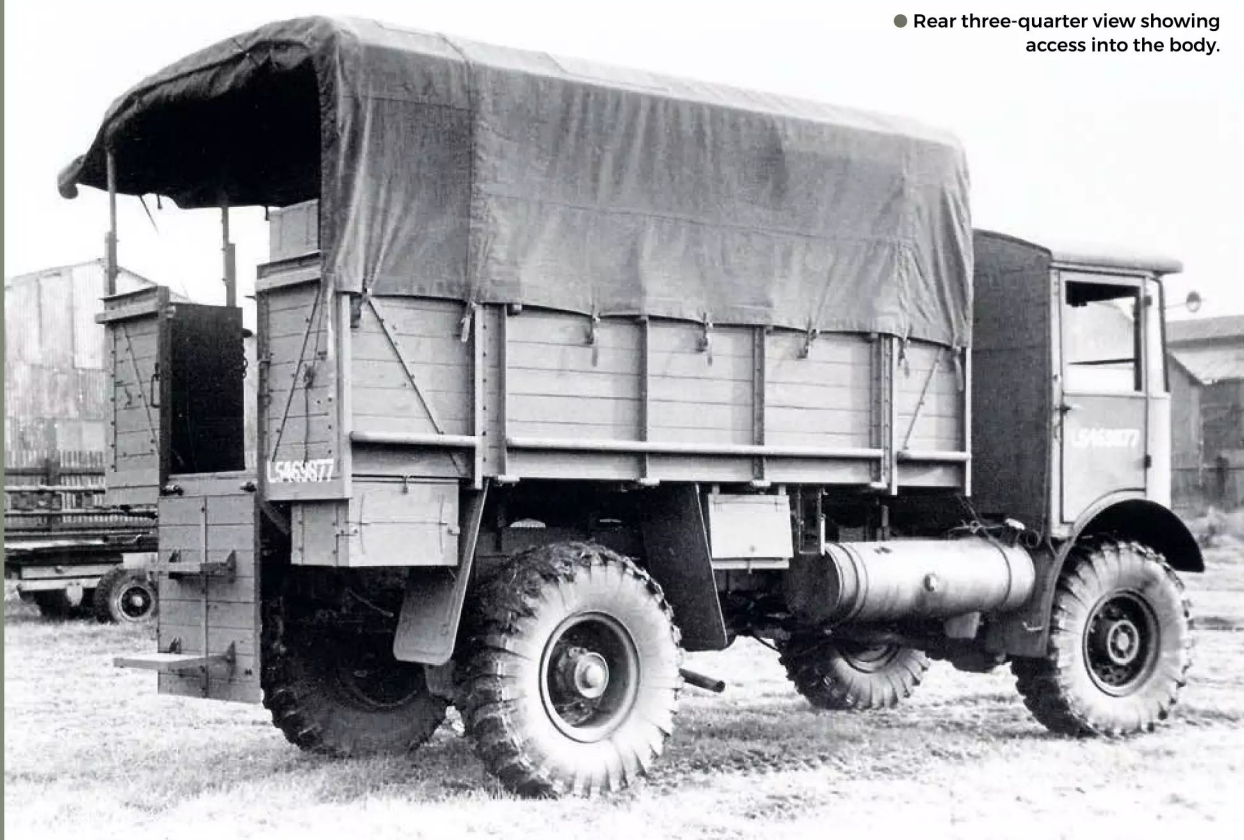


● Matador chassis showing the positions of the engine and transmission, and the centre-mounted winch that was fitted to artillery tractors.

- Matador showing what it can do in the rough stuff. Note the metal roof to the rear body, and the shape of the cab roof.



- Rear three-quarter view showing access into the body.



converted from diesels, for use in Norway. Petrol-engined trucks were also supplied to the RAF, who were not keen to store more than one type of fuel, for use as towing vehicles for heavy drawbar trailers. A small number of examples were also supplied to the Royal Navy.

Power from the engine was transmitted through a 16 inch (400mm) single dry-plate clutch to a unit-constructed four-speed gearbox, and there was a separately mounted two-speed auxiliary gearbox connected to the main 'box by a short propeller shaft. The auxiliary 'box was coupled to the fully-floating axles via a pair of propeller shafts, and also provided a power take-off for the winch, and compressed air for the braking system. Suspension was thoroughly conventional, consisting of long semi-elliptical multi-leaf springs. On most of the production vehicles, the brakes were compressed-air operated, but vehicles manufactured before January 1942 were fitted with servo-assisted hydraulic brakes, and some RAF vehicles had vacuum brakes.



● Some Matadors were supplied with a cab that could be split at the waistline to reduce shipping space... or, as seen here, to allow the crew to enjoy the open air! The towed load is a 4.5in field gun.

On the road, the Matador was capable of a maximum governed speed of 36mph (58km/h).

The two-seater cab was decidedly old-fashioned, consisting of essentially-flat panels attached to a timber frame and was constructed by a number of suppliers, including Park Royal

Vehicles. Writing in 'Old Motor' magazine in the 'seventies, Bart Vanderveen described the vehicle as being 'ugly'. Maybe distance lends enchantment, but I think he was a being bit unfair... let's just say that it was simple, well built, and had considerable presence!



● A surprising number of Matadors have survived, and the vehicle is popular with collectors. (Simon Thomson)



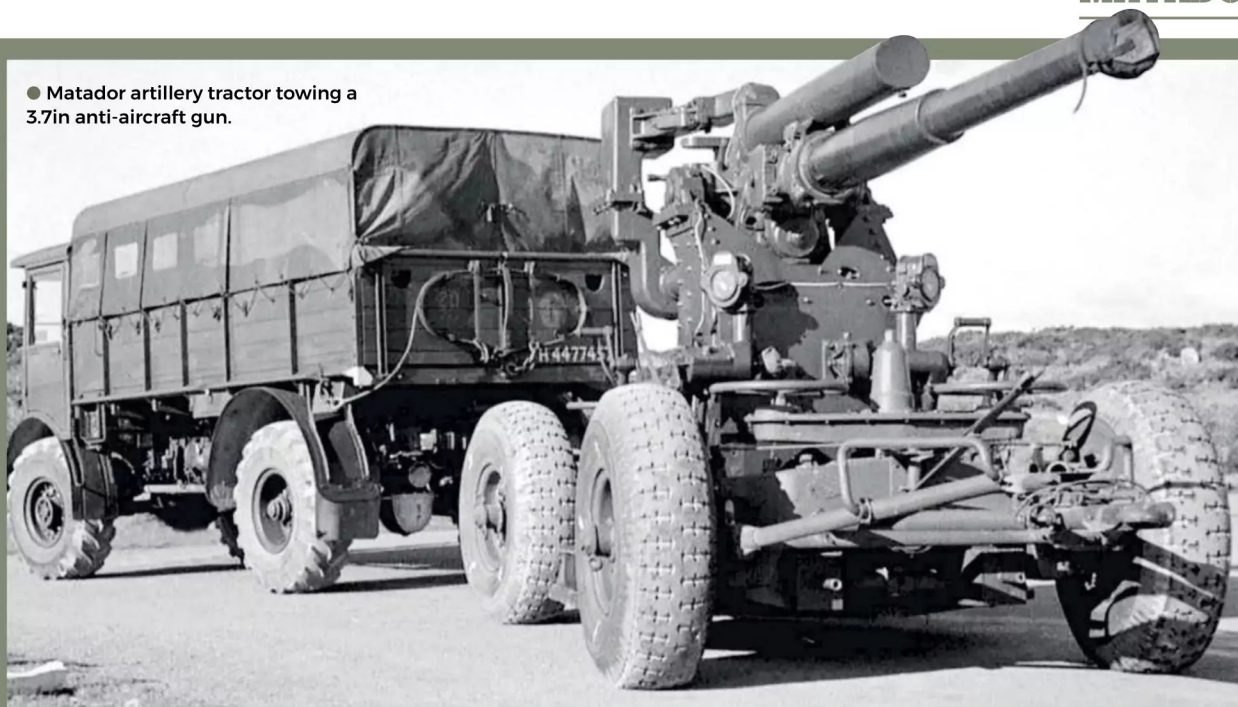
● Very tidy surplus petrol-engined Matador photographed at Sworder Motors prior to sale to the public. The truck is wearing a post-war British military registration (86RD48) as well as a trade plate.

Most Matadors can be recognised by the distinctive double-skin curved canvas-covered roof of the cab designed to reduce solar gain, but there were also steel-roofed cabs with at least two different profiles. An observation hatch was provided above the passenger seat to permit the use of an anti-aircraft machine gun.

The rear body, constructed by Park Royal, was of composite timber and steel construction and provided accommodation for a gun crew of nine or ten men, with sufficient space to stow their personal kit; maximum load was 3.4 tons (3500kg). Access was gained to the body by hinged doors at the forward end. Shell carriers were attached to slide rails in the floor, designed to make it easy to move heavy rounds inside the body, and there were adjustable racks for storing the shells. A removable canvas cover was provided for weather protection, supported on tubular steel hoops; on some early vehicles, the top of the canvas roof was replaced by a steel panel. A 5- or 7-ton Turner winch was installed between the chassis rails to assist with emplacing or extracting the gun.



● Matador artillery tractor towing a 3.7in anti-aircraft gun.



● Bart Vanderveen has described the Matador as 'ugly', and whilst it certainly has a utilitarian look, at the same time there is a harmonious simplicity, combined with considerable presence!



● A pair of Matadors photographed during the London Victory Parade in 1946. Both are towing Ruston-Bucyrus RB 19 excavators.



● WW2 Matador with the post-war New Zealand Defence Force.



● Well-restored Matador photographed at Ouistreham during one of the annual D-Day commemorative tours. (Simon Thomson)



● Appropriately nicknamed 'Sea Elephant', this Matador artillery tractor was photographed serving with the Royal Marines.



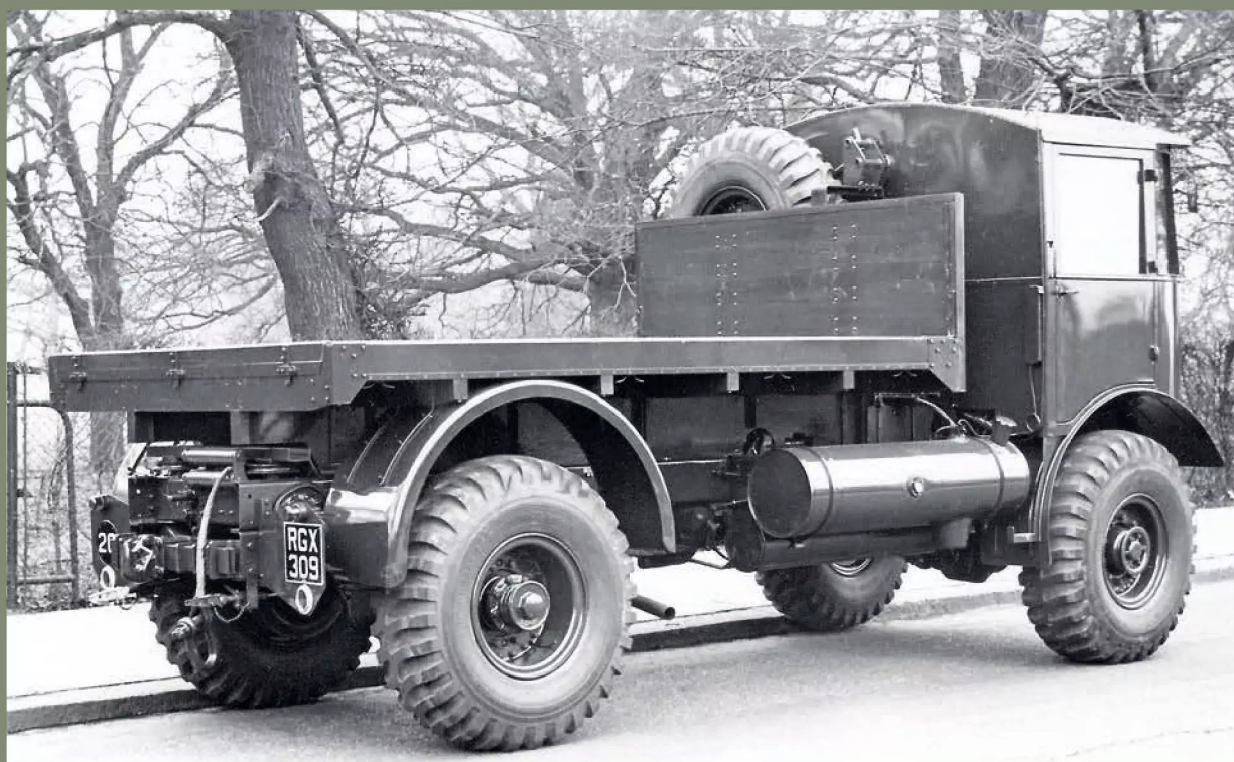
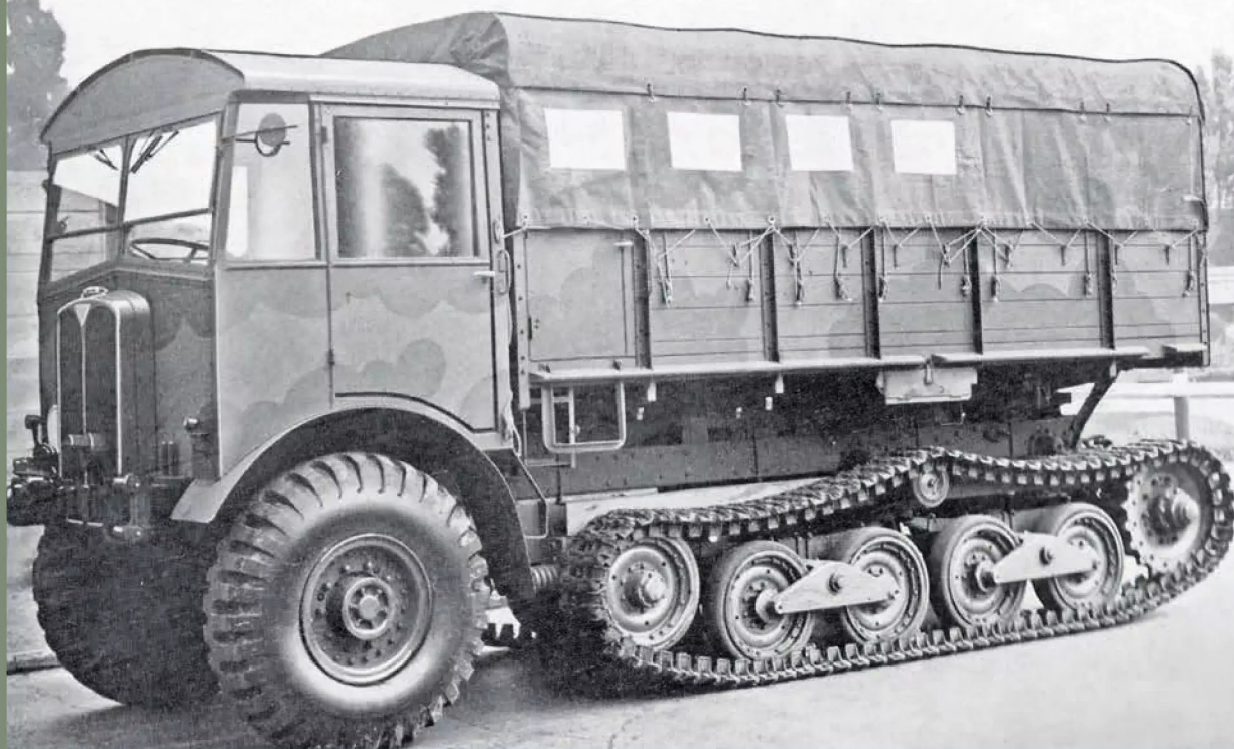
● RAF Matador flat-platform lorry towing runway-making plant on a 16-wheeled low-loader trailer. Note the non-standard cab.

Heavy-duty cross-country tyres ensured excellent off-road performance, and with its relatively-short chassis, minimal front and rear overhang, and forward-control cab the Matador was easy to manoeuvre and offered excellent visibility. Maximum towing capacity was 6.4 tons (6500kg).

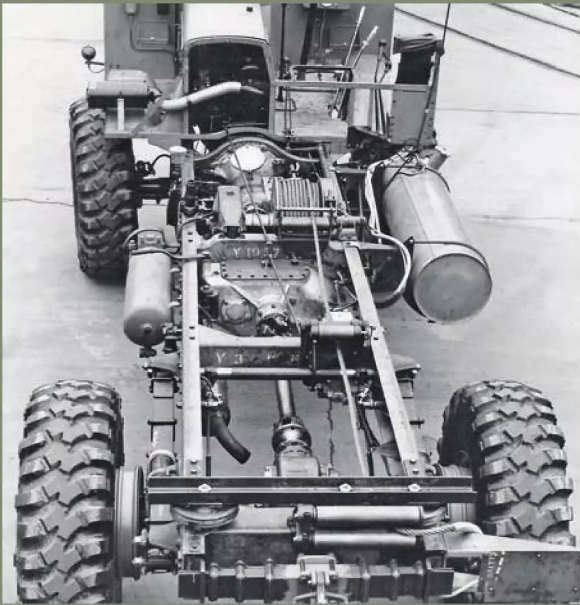
The Matador was the first 4x4 truck to be constructed in large numbers in Britain. Of the 9620 examples constructed during the war years, 8612 went to the Army, equipped as medium artillery tractors, or adapted for use as cargo vehicles; 417 went to the RAF, including vehicles equipped with signals bodies, and others described as 'flat platform trucks' that were used as drawbar tractors or as carriers for heavy engineers' plant. Of the remaining number, 416 were bodied as armoured command vehicles, and 175 were armoured and equipped with a 6-pounder (57mm) gun. Matadors also found other uses. For example, after the battle of El Alamein, Matadors were pressed into service as tank-recovery vehicles, hauling derelict tanks back to the repair shops.

A half-track Matador was constructed in 1943 using a shortened version of the tracks and suspension from a Valentine tank, intended as a tractor for 6-pounder (57mm) and 17-pounder (76.2mm) guns, but there was no

● This experimental half-track Matador was constructed in 1943 using shortened tracks and suspension from a Valentine tank. It was intended as a tractor for 6-pounder (57mm) and 17-pounder (76.2mm) guns, but no further examples were produced.



● Between November 1950 and September 1958, a further 791 examples of the Matador were produced. This civilian-registered flat-platform lorry was photographed during trials with the Fighting Vehicles Research & Development Establishment (FVRDE).




● Post-war chassis showing very little change when compared to the WW2 original.



● Introduced in 1958, the Matador Mk 2 was fitted with a version of the Park Royal Vehicles' streamlined cab... popularly described as the 'tin front'.



● The Matador was a favourite with contractors involved with both heavy recovery and timber extraction, the short wheelbase and forward-mounted cab helping manoeuvrability in tight spaces. (Phil Moth)




MATADOR

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● Dated 1951, this is the sales brochure for the post-war Matador.



● Although the cab owes little or nothing to AEC, and the chassis appears to have been shortened, this timber tractor is recognisably based on a Matador. (Phil Moth)



● Oxford Bus retained most of the cab for this recovery vehicle, installing a Harvey Frost crane in the rear. (Phil Moth)

series production. Large parts of the Matador chassis were also used in the construction of the AEC armoured car, a 4x4 armoured command vehicle, and a self-propelled 6-pounder (57mm) gun.

The last of the wartime Matadors rolled off the production line on 25 November 1945, with the chalked message 'The Last One of Our Best' on the front panel. But it wasn't quite the end because a further 791 were produced between November 1950 and September 1958, with quantities supplied to both the Ministry of Supply and the Pakistan Army. Total production amounted to 10,411 examples between 1938 and 1958.

The Matador name also continued to be used by AEC into the 'fifties, with Mk 2 and Mk 3 versions appearing in the catalogue. The Mk 2, for example, was offered to civilian customers from September 1958, and was powered by an AEC AV470 direct-injection diesel engine and fitted with a version of the Park Royal Vehicles' streamlined cab that had been introduced in the mid-fifties. The Mk 3 was listed as being available in forward-control and conventional bonneted form.

Many ex-military Matadors went on to enjoy second careers with bus and coach companies, and with heavy recovery, forestry and fairground

TECHNICAL SPECIFICATION

Production: 1939-45 and 1953-58.

Automotive details

Engine (Model 853): AEC A193; 7400cc (452in³); six cylinders; bore and stroke, 110x130mm; petrol; overhead valves; power output, 92bhp (69kW).

Engine (Model O853): AEC A173 or A187; 7580cc (463in³); six cylinders; bore and stroke, 105x145mm; indirect-injection diesel; overhead valves; power output, 95 or 105bhp (71-78kW), respectively.

Transmission: 4F1Rx2; 4x4.

Suspension: live axles, front and rear on semi-elliptical multi-leaf springs.

Brakes: hydraulic, with servo-assistance; compressed air; or vacuum operated.

Electrical system: hybrid 12V/24V.

Dimensions

Length, 249in (6325mm); width, 94in (2388mm); height, to top of canvas 122in (3099mm).

Wheelbase, 151in (3835mm).

Weight, unladen, 16,016 lb (7280kg); laden, 24,304 lb (11,047kg).

Performance: maximum speed, 36mph (58km/h).

Variants

Tractor, 4x4, heavy anti-aircraft

Tractor, 4x4, medium artillery

Truck, 4x4, 5 ton, flat platform

Truck, 4x4, 5 ton, GS cargo

Truck, 4x4, 5 ton, mobile air traffic control

Truck, 4x4, 5 ton, signals



contractors. For example, Wynns Heavy Haulage acquired around a dozen surplus Matadors over a 13-year period, employing them as tackle wagons in support of their heavy-haulage operations, or in round timber extraction. In many cases, particularly where bus companies were involved, the original bodywork was removed and replaced with something altogether more stylish, effectively disguising the age of the vehicles.

● This recovery vehicle, belonging to Hampshire Bus, has been re-bodied to masquerade as a Matador Mk 2... but, the spring-loaded tow bar gives the game away. (Phil Moth)

MODELS 854 & O854

A six-wheeled Matador/Marshal hybrid produced for the RAF

Often incorrectly described as a Matador, although in fact no name was ever assigned to this vehicle, the Models 854 and O854 are better viewed as a Matador-Marshall hybrid, consisting of an extended version of the basic chassis design of the Matador to which has been attached the rear bogie of the Marshal. It proved itself to be a most reliable machine, and, like the Matador, both petrol and diesel variants were constructed, the latter identifiable by the 'O' prefix to the model designation.



● The Autovac tank on the left-hand side of the radiator, and the depth of the radiator itself, give this away as being a petrol-engined Model 854 refuelling tanker. Note the iconic 'Mickey Mouse ears' camouflage.

The extended chassis was 'borrowed' from the Matador as were the four-speed main gearbox and the two-speed auxiliary box, and whether petrol- or diesel-powered, the engine was also a variant of that used in the Matador. Some examples were fitted with a 7-ton Turner winch driven via a power take-off on the auxiliary gearbox; fairlead

rollers were provided which made it possible to winch from the front or rear of the vehicle. Around 50 of the petrol-engined variant were fitted with a wider and deeper radiator to assist in cooling in hot climates whilst the truck was stationary with the engine running to operate the refuelling pump, a process which could take up to an hour.

The front suspension followed the

pattern established by the Matador, with a live axle suspended on multi-leaf semi-elliptical springs. At the rear, the bogie, the design of which was based on the War Office patented bogie of 1928, was centrally pivoted and the springs were inverted. The original axles were of the semi-floating pattern but late production vehicles were equipped with fully-floating axles. The brakes,

● A pair of RAF AVTUR refuelling tankers drawing fuel from underground tanks.



● Nicknamed 'The Camel', this Model O854 diesel-engined tanker spent a period with Hawker Siddeley Aviation before passing into private hands.



● Surplus Model O854, photographed at Sworder Motors, awaiting disposal.

which operated on all six wheels, were vacuum-assisted hydraulic.

With seating for a two-man crew, the cab was generally similar to that used for the Matador gun tractor, with both canvas-covered and, at least two patterns of, steel roofs produced. Aircraft refuelling tankers were fitted with a sliding roof panel that was designed to aid visibility when manoeuvring under aircraft wings and there were additional windows in the rear bulkhead for the same reason. A small spotlight was generally mounted on the cab roof, and additional high-level windows were provided at the front, above the windscreen, for those tankers adapted for the AVTUR (aviation turbine) role. A total of 1891 examples were manufactured, all for the Air Ministry, between 1940 and 1945, with construction of the last chassis started on 3 October 1945. Of these, 192 were equipped with a Coles Mk 7 Series 7 revolving petrol-electric crane intended to assist in maintenance operations and to recover crashed aircraft. The crane was rated at 5 tons (5.09 tonne) at a radius of 90in (2286mm), reducing to 1½ tons (1.5 tonne) at 231in (5867mm). The power



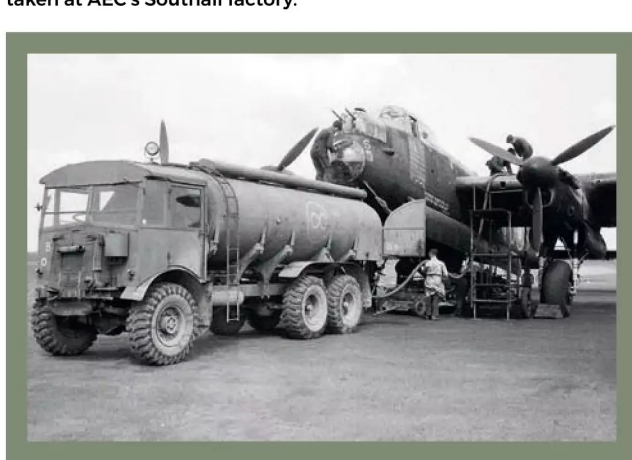
● This Model O854 enjoyed a second career at East Midlands Airport where it pumped AVGAS to civilian aircraft.



● The post-war registration (27AD59) and the glossy paintwork on this Model O854 help to date the photograph, which was taken at AEC's Southall factory.



● Model O854 RAF refuelling tanker. Note how the absorbent matt paint shows up greasy handprints on the cab door.



● Early petrol-engined Model 854 in the process of refuelling a Lancaster. The six tanks on the Lancaster hold a total of 2154 gal (9780 litres) of AVGAS fuel, with each tank filled independently from the top of the wing.

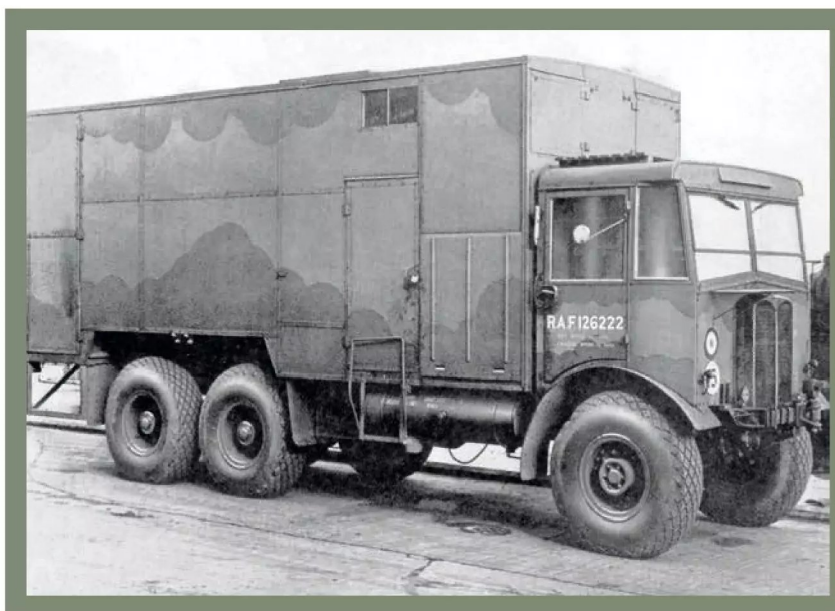


● East Midland Airport's Model O854 refuelling tanker tops up a Dakota belonging to Kestrel Aviation.

for hoisting, derricking and slewing was derived from a DC generator coupled to a Ford V8 petrol engine positioned behind the cab, and there were electromagnetic brakes for all three operating modes.

A further 185 vehicles were fitted with an enclosed house-type body housing the plant necessary to separate oxygen and nitrogen and to compress it into storage cylinders. A number of these lacked the driven front axle.

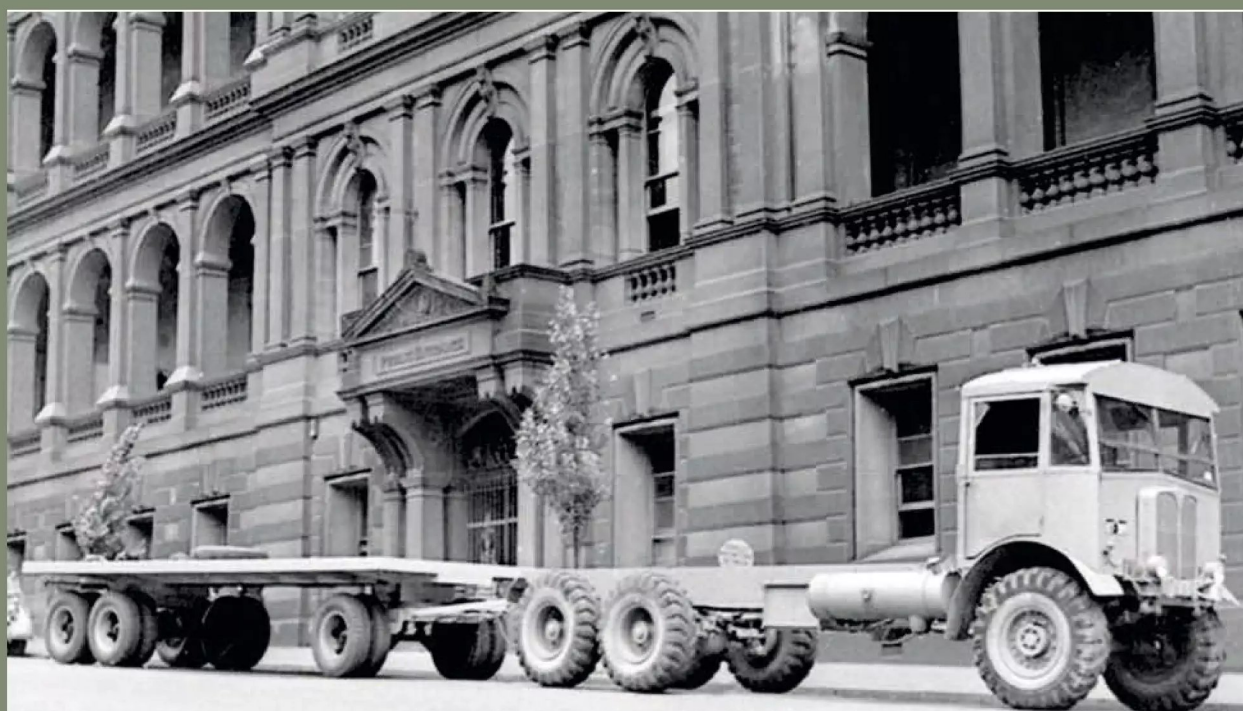
The remainder, described as Mk 1, Mk 2 and Mk 4, were equipped with a 2500-gallon (11,350 litre) three-compartment tank for aircraft refuelling. A Stuart-Turner donkey engine and Zwicky pumping and metering equipment were installed in a closed compartment at the rear, together with four 45 foot (13.7m) hose-reels and nozzles. A further six 16 foot (4.88m) long hose-reels were carried in stowage boxes attached to the top of the tank. The Mk 4 design was fitted with two 13 feet (4m) long elevating booms, each with 12 feet (3.7m) of hose, at the forward end of the tank. From about



● RAF mobile oxygen/nitrogen plant. A total of 185 vehicles were equipped for this role; some lacked the driven front axle.

1947, a number of the tankers were converted for refuelling aircraft with AVTUR jet turbine kerosene, with the remaining vehicles now being described as being suitable for AVGAS (aviation gasoline).

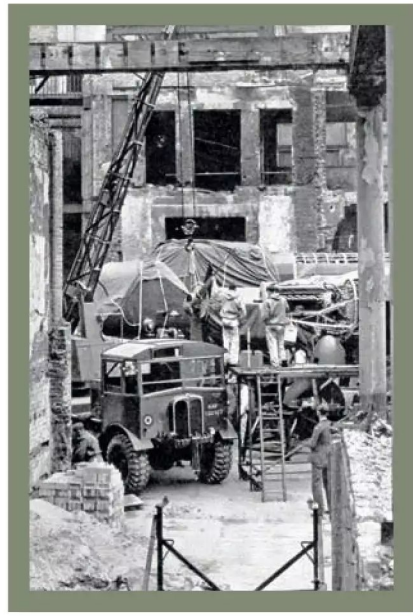
Perhaps as many as 10 examples of a low-silhouette 6x6 heavy artillery tractor were constructed in 1944, with both soft-skin and armoured variants produced; at least one vehicle was also equipped as a tanker. Designated



● Model O854 equipped as a towing vehicle. The location and origin of the photograph are not known.



● Model O854 equipped with a Coles Mk 7 Series 7 revolving petrol-electric crane intended to assist in maintenance operations and to recover crashed aircraft. The vehicle bears the post-war registration number 21AC40.



● RAF Model O854 crane lifting a Lancaster bomber into the fire-damaged John Lewis store on Oxford Street.

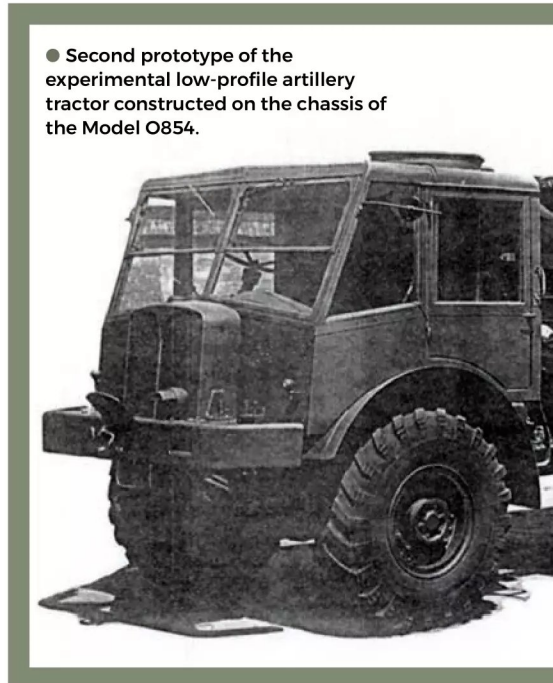


Model O858, and based on the O854, these tractors were powered by the AEC A205 9610cc (586in³) Ricardo Comet engine. An Air Ministry order was placed in August 1944 for 1000 examples, but this was subsequently reduced to 500 and then to 250 before

● Model O854 crane showing the location of the Ford V8 donkey engine and generator behind the cab.



● Low-profile artillery tractor photographed during trials... the original notes that accompany this photograph state that the vehicle is 'stuck, defeated by wet clay collected on the front axle'!



● Second prototype of the experimental low-profile artillery tractor constructed on the chassis of the Model O854.



● This may well be a mock-up for the armoured version of the Model O854 heavy artillery tractor which was photographed whilst under test at the Fighting Vehicles Proving Establishment (FVPE). At this stage the rear body has not been fitted, but the chassis has been loaded to simulate the correct weight.



● Nothing more is known about this vehicle which appears to be a low-profile Model O854-based fuel tanker.



being cancelled altogether in August 1945: clearly, there was to be no military series production. However, a total of 95 examples of a soft-skin tractor based on the Model O858 were eventually constructed and were supplied to Shell Petroleum and the Iraq Petroleum Company between 1946 and 1948.

As regards a post-military career, the oxygen/nitrogen plant was perhaps a little too specialised for a role in civilian life, but ex-military tankers were frequently snapped up by civilian airfield operators. And the mobile crane proved to be useful with the likes of scrapyards, boat yards, heavy-haulage operations, and with demolition contractors.

TECHNICAL SPECIFICATION

Production: 1940-45.

Automotive details

Engine (Model 854): AEC A193A; 7400cc (452in³); six cylinders; bore and stroke, 110x130mm; petrol; overhead valves; power output, 92bhp (69kW).

Engine (Model O854): AEC A196A; 7580cc (463in³); six cylinders; bore and stroke, 105x146mm; indirect-injection diesel; overhead valves; power output, 95bhp (71kW).

Transmission: 4F1Rx2; 6x6.

Suspension: live axles, front and rear on semi-elliptical multi-leaf springs, inverted at the rear.

Brakes: hydraulic, with vacuum servo-assistance.

Electrical system: hybrid 12V/24V.

Dimensions: Model O854, refuelling tanker

Length, 304in (7722mm); width, 94in (2388mm); height, to top of tank, 130in (3302mm).

Wheelbase, 177in (4496mm); bogie centres: 51in (1295mm).

Weight, unladen, 24,865 lb (11,302kg); laden, 45,000 lb (20,455kg).

Performance: maximum speed, governed 29mph (47km/h).

Variants

Truck, 5 ton, 6x6, crane

Truck, 10 ton, 6x6, 2000 gallon refuelling

Truck, 10 ton, 6x6, 2500 gallon refuelling

Truck, 10 ton, 6x6, mobile oxygen/nitrogen plant

MODELS 0855 & 0856

A heavy armoured car designed for the desert

The AEC heavy armoured car originated as a private venture in 1941, but, following a demonstration on Horse Guards Parade, found rapid favour with Winston Churchill, and was quickly adopted by the War Office. Production started in January 1942. The Mk 1 variant was armed with a 2-pounder (40mm) gun in a two-man turret identical to that fitted to the Vickers-Armstrong Valentine infantry tank. In the Mk 2 version, this was replaced by a 6-pounder (57mm) gun mounted in a heavier, redesigned turret... the same gun had apparently been experimentally fitted in the field to a small number of Mk 1 vehicles operating in the Middle East. The final version, the Mk 3, was fitted with a three-man turret and armed with a 75mm gun. All variants were also equipped with Bren and BESA machine guns. The automotive equipment was originally based on that of the Matador.

AEC's intention had been to produce a wheeled tank... a fast and powerful wheeled armoured vehicle that was not constrained by the negative aspects of track-layers, but, which was sufficiently well-armed that it could fight its way into enemy positions through mud, sand or boulder-strewn terrain. Reviewing the vehicle in its August 1945 issue, *'Automobile Engineer'* described it as 'one of the largest and most powerful British vehicles of its type' and it was certainly large, as well as being the only British armoured car to utilise a diesel engine. However, despite the fact that the vehicle was constructed on a double drop frame, its height still presented an easy target for enemy tanks, and, with a maximum speed of 42mph (68km/h), it was not especially fast... several of the German armoured cars were capable of 50mph (80km/h) or even 62mph (100km/h). However, it was possible to achieve a range of 250 miles (405km) on a single tank of fuel.

The welded and riveted hull was a slab-sided boxy affair, narrowing towards the front and the rear, and with large exposed wheels shod with run-flat tyres; the prototype lacked rear mudguards. The hull was welded to the frame at 14 points, and shields were fitted under the chassis to protect the running gear from entanglement

with barbed wire and to reduce the likelihood of getting hung-up when crossing obstacles. Inside, the hull was divided into the usual three compartments. The driver was located at the front, there was a surprisingly-spacious fighting compartment in the centre equipped for two or, latterly, three crew members, and the engine compartment was at the rear.

● Originally produced in 1941, as a private venture, this photograph shows the prototype for the Mk 1 heavy armoured car. The main gun is a 2-pounder (40mm), mounted in a modified version of the turret of the Mk 2 Valentine tank.

An anti-aircraft variant was prototyped, based on the Mk 2, and equipped with twin Oerlikon cannons, capable of firing at a very high angle. Allied air superiority in the closing years of the war meant that there was no series production.

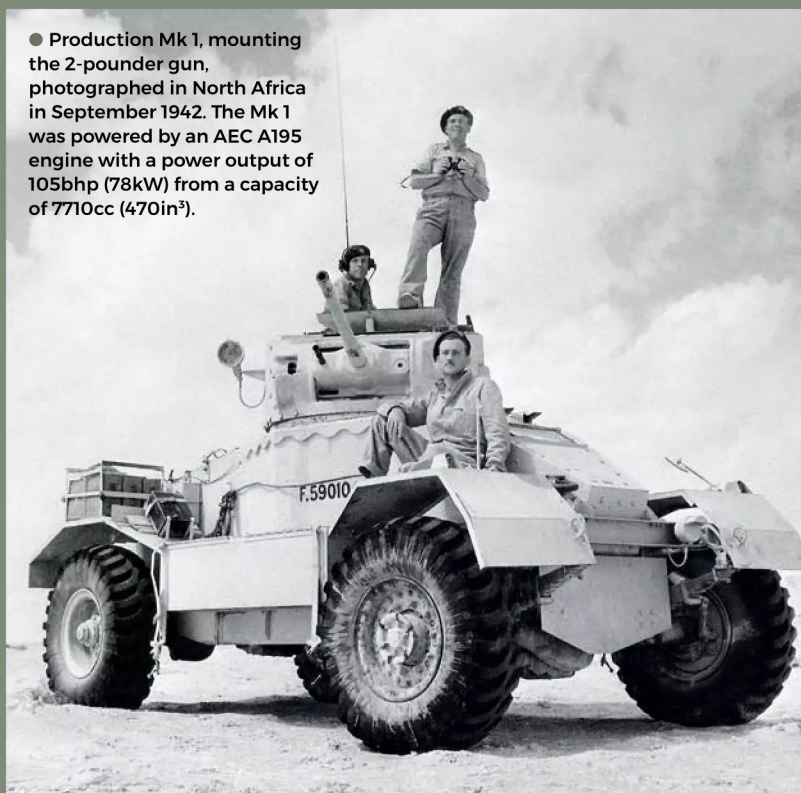
All Mk 1 armoured cars were fitted with the AEC A195 engine, a six-cylinder overhead-valve diesel, producing 105bhp (78kW) from a capacity of 7710cc (470in³). In practice, this engine, which was similar to that used in the Matador artillery tractor,





● Sometimes it seems that all military automotive trials aim at getting the vehicle under test stuck in a morass of mud... in this shot, the prototype armoured car seems to have come to a halt.

● Production Mk 1, mounting the 2-pounder gun, photographed in North Africa in September 1942. The Mk 1 was powered by an AEC A195 engine with a power output of 105bhp (78kW) from a capacity of 7710cc (470in³).



proved to be insufficiently powerful and on the Mk 2 and 3 it was superseded by an A197 unit, in which the capacity was increased to 9636cc (588in³), and the power output to 145bhp (108kW). This was a similar power unit to that fitted in the Valentine tank. The engine was installed at an angle to reduce the height to the top of the engine compartment and was also skewed relative to the chassis to provide sufficient space for the fuel tank. There was a conventional single dry-plate clutch and the engine was unit constructed with the four-speed transmission. The transfer case was mounted separately in the centre of the chassis with propeller shafts running to the front and rear axles. The normal driving axle was at the front, with the rear axle able to be selected when required... some sources suggest that this was because the standard Matador transfer box was employed in conjunction with the rear-mounted engine and this meant that



● The Mk 2 armoured car featured a redesigned hull and turret, and was equipped with a 6-pounder

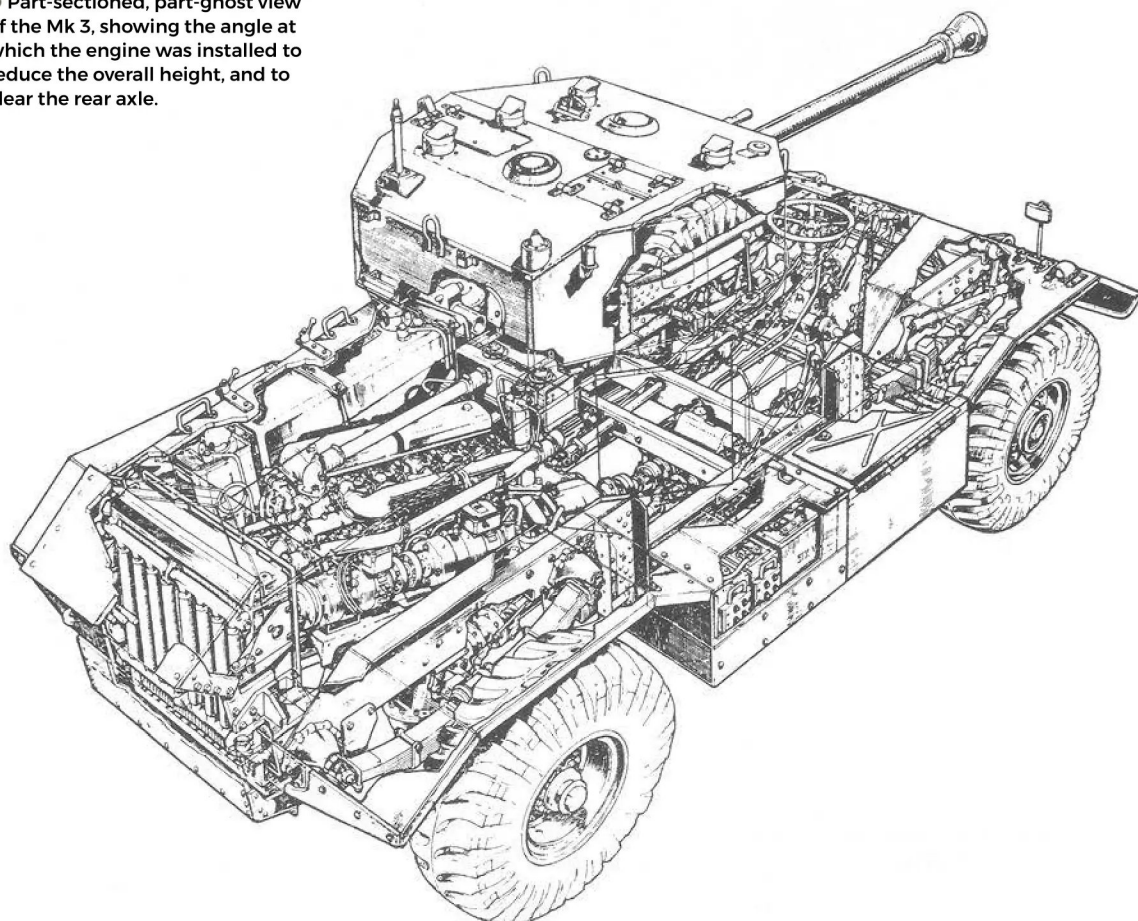
● A prototype was constructed in 1944 using the Mk 2 hull, with a turret similar to that used for the Crusader tank, and mounting a pair of Oerlikon 20mm anti-aircraft machine guns. There was no series production.





- The Mk 3 was intended for the close-support role and mounted a 75mm main gun.

- Part-sectioned, part-ghost view of the Mk 3, showing the angle at which the engine was installed to reduce the overall height, and to clear the rear axle.





● Both the Mk 2 and the Mk 3 (seen here) were powered by the larger and more powerful AEC six-cylinder A197 diesel engine, producing 145bhp (108kW) from 9636cc (588in³).

the propeller shaft that would normally drive the rear axle was now driving the front! In the interests of achieving the best ground clearance, which measured up at 12.5in (317mm), the shaft driving the rear axle ran alongside the engine.

The suspension was decidedly truck-like, with fully-floating live axles at the front and rear, suspended on multi-leaf semi-elliptical springs. There was no power assistance on the steering which required a hefty 6.5 turns from lock to lock, and the steering wheel was presented to the driver flat – rather in the style of a bus.

The hull and turret were well protected, with 65mm of well-sloped frontal armour, giving an effective thickness of nearly 90mm; the rear of the turret also had 65mm of armour, whilst the sides had 60mm. The turret



● Restored Mk 2 AEC armoured car at the Tank Museum in Brussels. (Zandcee)



● Post-war line-up of AEC armoured cars at a vehicle storage or disposals site.

roof provided 20mm of protection at the front and 15mm at the rear. The sides of the hull, the engine deck and the underside, had a minimum of 16mm. The driver was placed low down at the front of the chassis, allowing the turret to traverse through the full 360°, providing the driver's hatch and the engine-compartment covers were closed.

Originally designed for the open spaces of the North African desert, the Mk 1 saw its first action in 1942. The Mk 2 and 3 took part in the fighting in north-western Europe following the D-Day invasion. However, the enormous size of the AEC must have made it a very tricky proposition in Normandy where, nevertheless, a number did operate, providing anti-tank support in the reconnaissance role.

When production ended in April 1944, a total of 620 examples had been constructed, of which 120 or 122 were of the Mk 1 pattern, and 500 of the Mk 2 and 3. A number of Mk 3 vehicles remained in service after the end of the war, until they were replaced by the Alvis Saladin (FV601) from 1958 onwards. Others were supplied to Belgium and France.

TECHNICAL SPECIFICATION

Production: 1941-44.

Automotive details

Engine (Mk 1): AEC A195; 7710cc (470in³); six cylinders; bore and stroke, 105x146mm; indirect-injection diesel; overhead valves; power output, 105bhp (78kW).

Engine (Mks 2 and 3): AEC A197; 9636cc (588in³); six cylinders; bore and stroke, 120x142mm; indirect-injection diesel; overhead valves; power output, 145bhp (108kW).

Transmission: 4F1Rx2; 4x4.

Suspension: live axles, front and rear on semi-elliptical multi-leaf springs.

Brakes: compressed air.

Electrical system: 24V.

Dimensions: Mk 3 armoured car

Length, 221in (5613mm); width, 106in (2692mm); height, to top of turret 106in (2692mm).

Wheelbase, 137in (3480mm).

Typical combat weight, 28,448 lb (12,930kg).

Performance: maximum road speed, 42mph (68km/h); off-road, 18mph (30km/h).

Variants

Armoured car, 4x4, Mk 1, 2-pounder (40mm) gun

Armoured car, 4x4, Mk 2, 6-pounder (57mm) gun

Armoured car, 4x4, Mk 2, anti-aircraft, twin Oerlikon 20mm guns

Armoured car, 4x4, Mk 3, close support, 75mm gun

MODELS 0853 & 0857

Wheeled armoured vehicles designed to act as mobile command headquarters

One of the less well-known uses for the Matador was its application as the basis for a 4x4 armoured command vehicle (ACV) for divisional and brigade commanders in the field. The first contracts were placed in April 1940 and, due to the luxurious levels of comfort found within, the vehicles were soon nicknamed 'Dorchester' by users... apparently, in honour of the swish London hotel of the same name. The vehicles were rapidly adopted by many formation commanders, and were used for the first time in North Africa, and went on to be used in Italy, and north-western Europe. Three of the machines were captured in North Africa on the outskirts of Mechili during 7-8 April by Erwin Rommel and two of these were used by him for the rest of the campaign, nicknamed 'Max' and 'Moritz'.

Despite the vehicle's popularity with officers, by 1943, it was obvious that more space was required and that the Matador chassis was no longer adequate. Attention turned to using the chassis of the RAF's Model O854 aircraft refuelling tanker to produce a bonneted 6x6 variant. The chassis for the first of these vehicles appeared in December 1943 with production beginning in 1944 and continuing into 1945.

The original 4x4 variant was powered by an AEC A187 six-cylinder engine, producing 105bhp (78kW) from a capacity of 7710cc (470in³). On the larger, 6x6, variant, the engine was an AEC A198 six-cylinder unit, this time producing 145bhp (108kW) from 9636cc (588in³). In both cases, the engine was coupled to a four-speed manual gearbox and two-speed transfer case. The standard Matador suspension was employed, with live axles carried on multi-leaf semi-elliptical springs, inverted at the rear on the 6x6 variant.

The hulls, which were fabricated from 9mm or 12mm armoured plate welded to a steel framework, were little more than an armoured box, and the first two examples of the 4x4 variant were built by Guy Motors using Matador chassis; all later vehicles were constructed by The Birtley Company in Newcastle-upon-Tyne, and Weymann Motor



● Three-quarter front view of the 4x4 armoured command vehicle... with the canvas shelter making it look like rather like a pizza wagon!



● And from the other side, showing the right-hand access door, and the Vent-Axia fan and antenna mount on the roof.

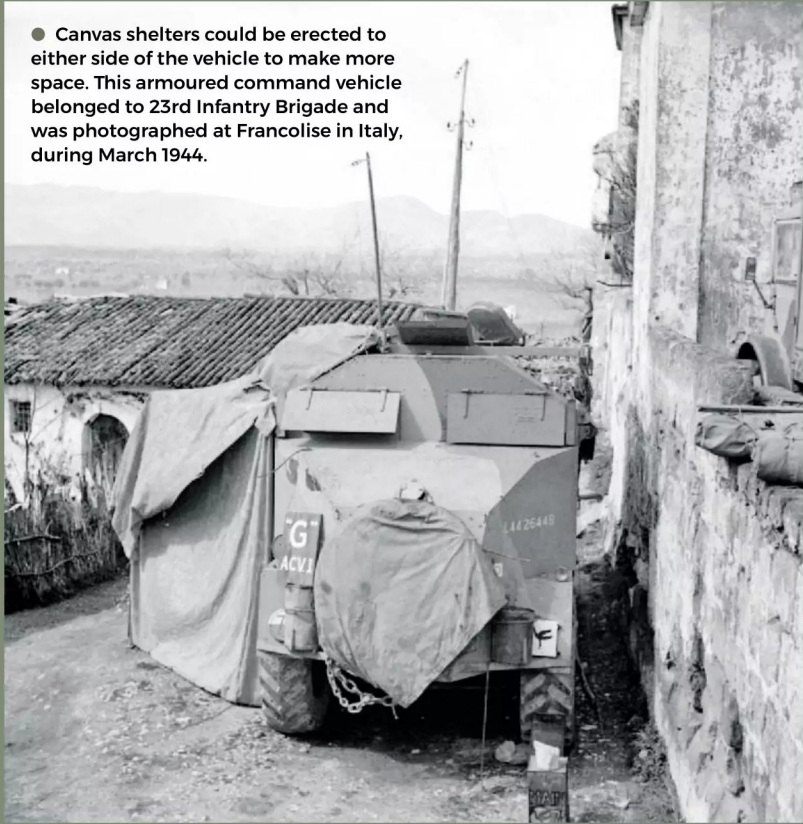


- This 4x4 command vehicle has an unusual longitudinal curved profile attached to the roof along either side.

- The 'HP' armoured command vehicle was equipped with an RCA R107 receiver, a Number 19 set and a Number 53.



● Canvas shelters could be erected to either side of the vehicle to make more space. This armoured command vehicle belonged to 23rd Infantry Brigade and was photographed at Francolise in Italy, during March 1944.



Bodies at Addlestone. No vehicle-mounted weapons were included, but apparently a Bren gun was carried inside the hull.

The 4x4 variant was a forward-control vehicle with a two-man cab onto which was attached a snub-nosed engine compartment. There was space for two men in the cab, which was separated from the rear body by a partition, and there was seating and desks for another four men in the rear, where there was also radio equipment. Doors were provided on either side and most of the armoured command vehicles included provision for an extension tent, with roll-up canvas and a supporting framework. In an effort to disguise these vehicles from the air, magician Jasper Maskeleyne is credited as having come up with a method of altering the appearance of the ACV so that it looked like a GS load carrier. The camouflage included an extended nose and a longer cab roof.

The larger, 6x6 variant was a normal-control vehicle designed to be operated



● A total of 416 examples of the 4x4 variant were produced between 1940 and 1945.

● Three armoured command vehicles were captured in North Africa on the outskirts of Mechili by Erwin Rommel and two of these, nicknamed 'Max' and 'Moritz', were used by him for the rest of the campaign. The photograph shows 'Max'.



● The 6x6 command vehicle provided more space at the rear, which was divided into a staff room and a wireless compartment.





● Nicknamed 'Jenny the Creme Cracker', this 6x6 armoured command vehicle, with the canvas shelter erected, shows off its roof racks designed for miscellaneous stowage... which, in this case, includes several jerrycans and a dartboard!

by a crew of seven, or subsequently eight, men. In this case, there were two separate compartments... an operations room and a radio room, with the two areas separated by a full height bulkhead.

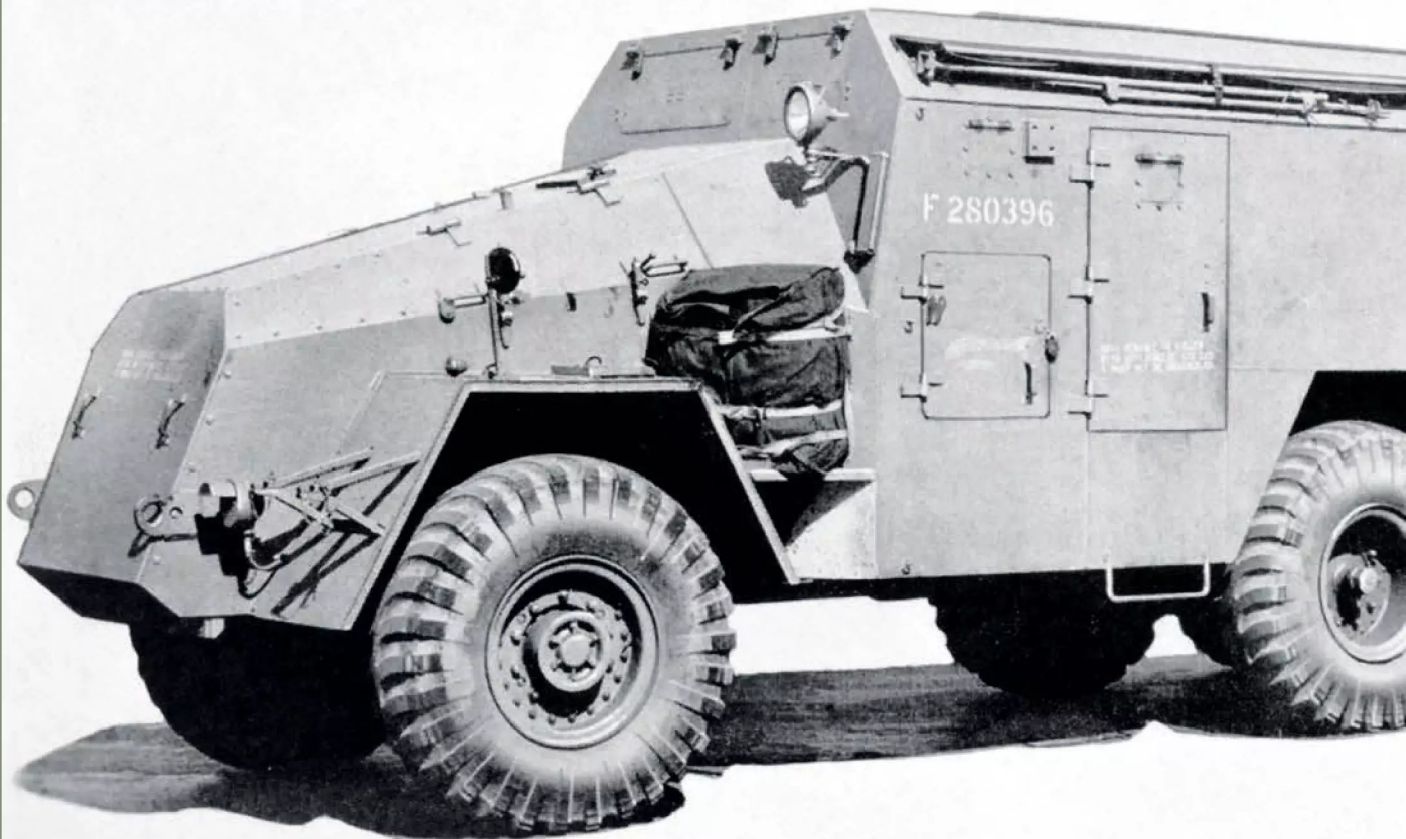
Two swivel chairs were provided for the senior officers, with a third chair for the signals/operations officer. The remaining crew normally consisted of signals/operations/intelligence NCOs or clerks.

Standard equipment included tables, map boards, battery cupboards, storage cupboards, radio sets, field telephones, cipher machines, and office necessities. A battery charger was provided at the rear.

Both types of armoured command vehicle were built in two configurations, described as LP (low power) and HP (high power), according to the radio equipment carried. LP vehicles were equipped with two Number 19 sets, whilst the HP variant had a powerful RCA R107 receiver, one Number 19 set and one Number 53.

Other vehicles produced using the

● As with the 4x4, support poles were carried to allow a canvas shelter to be erected beside the vehicle.



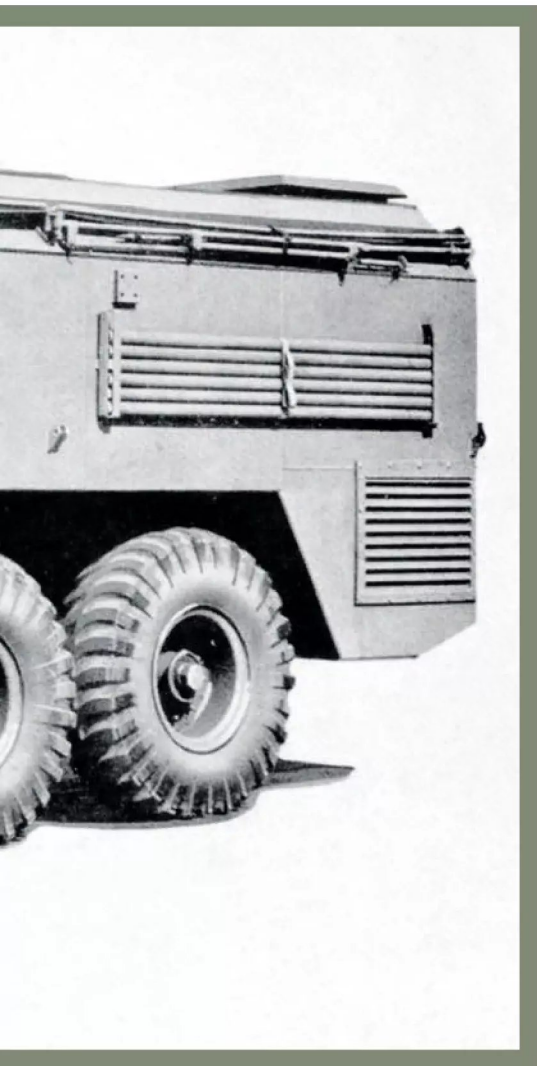
same basic 4x4 Matador chassis included an armoured personnel carrier, an armoured demolition vehicle, and a mine-laying vehicle.

The armoured personnel carrier provided accommodation for 10 men in addition to the crew, and the demolition vehicle was intended for destroying roads and bridges under fire and included a rock-boring machine and a pile driver operating through hatches. Finally, the mine layer included stowage in the rear part of the body and a delivery chute for mines. By the autumn of 1941, instructions were being issued to convert existing personnel carriers and mine layers to armoured command vehicles.

A total of 567 examples of all variants were constructed between 1940 and 1945, with the last chassis, a 6x6, completed at AEC's works on 14 February 1945. Of these, 416 were of the

4x4 type, based on the Matador chassis, of which 310 were equipped as armoured command vehicles, 45 were configured as armoured demolition vehicles for use by the Royal Engineers, and 45 as armoured personnel carriers, with the remainder described as armoured mine layers, later converted to armoured mine carriers, and also meant for the Royal Engineers. There were 151 examples of the 6x6 configuration, which, incidentally, cost a massive £6550.55 each, excluding the cost of any radio equipment.

Many of these oddball armoured vehicles remained with the British Army into the post-war years, particularly those of the 6x6 configuration, but probably saw little service, and, despite a scheme to produce an armoured command vehicle (FV11061) using the AEC Militant Mk 3 chassis, they were gradually replaced by the FV610 Alvis Saracen. Such vehicles as were sold to the public would have required a lot of attention before being suitable for service, nevertheless, a handful were stripped of their armoured bodies and converted to recovery vehicles.



TECHNICAL SPECIFICATION

Production: 1940-45.

Automotive details

Engine (Model O853): AEC A187; 7710cc (470in³); six cylinders; bore and stroke, 105x146mm; indirect-injection diesel; overhead valves; power output, 105bhp (78kW).

Engine (Model O857): AEC A198; 9636cc (588in³); six cylinders; bore and stroke, 120x142mm; indirect-injection diesel; overhead valves; power output, 145bhp (108kW).

Transmission: 4F1Rx2; 4x4 or 6x6, according to model.

Suspension: live axles, front and rear on semi-elliptical multi-leaf springs; springs inverted at rear for 6x6 model.

Brakes: compressed air.

Electrical system: 24V.

Dimensions: Model O853, 4x4 armoured command vehicle

Length, 240in (6096mm); width, 102in (2591mm); height 113in (2870mm).

Wheelbase, 151in (3835mm).

Laden weight, 22,932 lb (10,424kg).

Dimensions: Model O857, 6x6 armoured command vehicle

Length, 313in (7950mm); width, 95in (2413mm); height, 106in (2692mm).

Wheelbase, 164in (4166mm).

Bogie centres, 48in (1220mm).

Laden weight, 40,320 lb (18,327kg).

Performance: maximum speed, 30mph (48km/h).

Variants

Armoured command vehicle, 4x4, HP and LP

Armoured demolition vehicle, 4x4

Armoured mine-laying vehicle, 4x4

Armoured personnel carrier, 4x4

Armoured command vehicle, 6x6, HP and LP

COCKATRICE & BASILISK

Mythical, fearsome flame-throwing serpents!

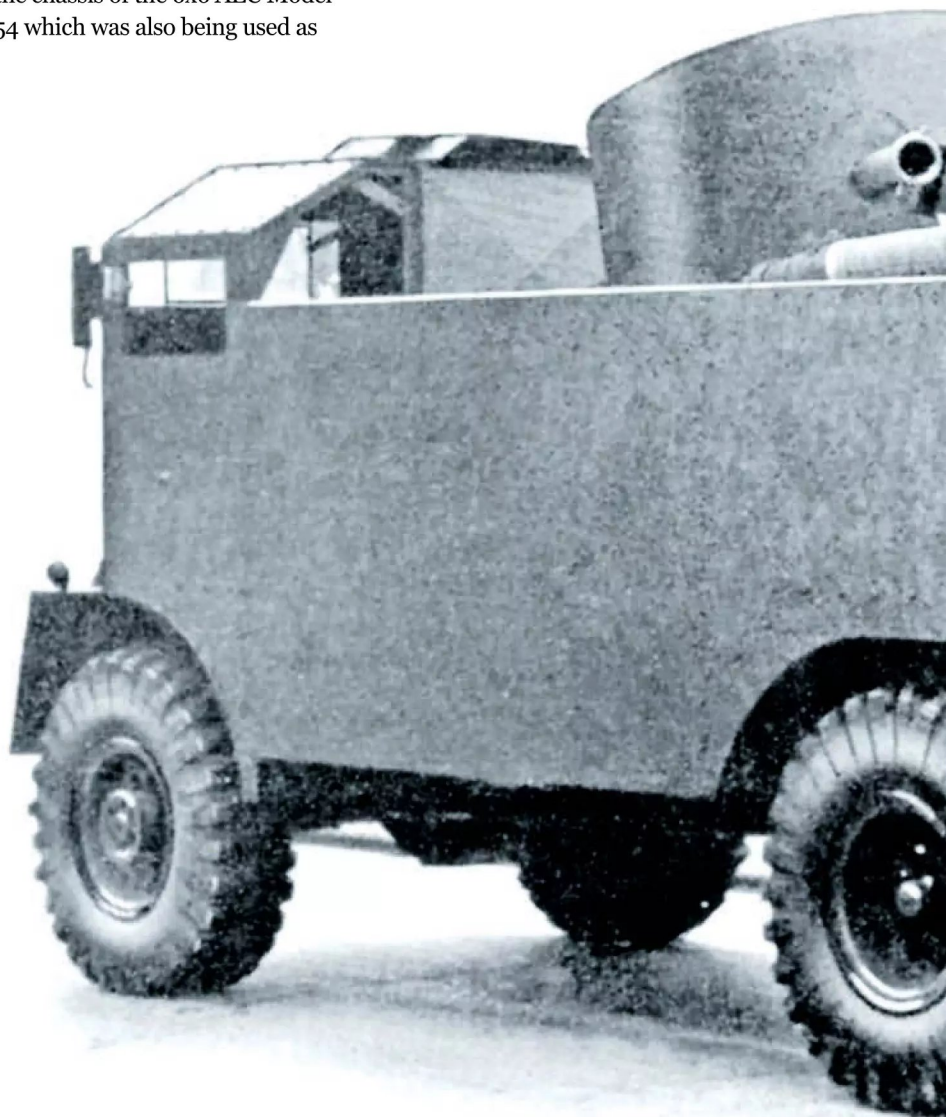
In July 1940, Lagonda Motors, constructed and demonstrated a small portable flame-thrower device to officials of the Department of Miscellaneous Weapons Development (DMWD). Although the weapon had a range of little more than 100 feet (33m), it came to the attention of Major General Sir Donald Banks, who at the time was the Director-General of the Petroleum Warfare Department. He asked Lagonda if they could design a larger mobile unit of a similar type that would have a range of 150 feet (45m) or more.

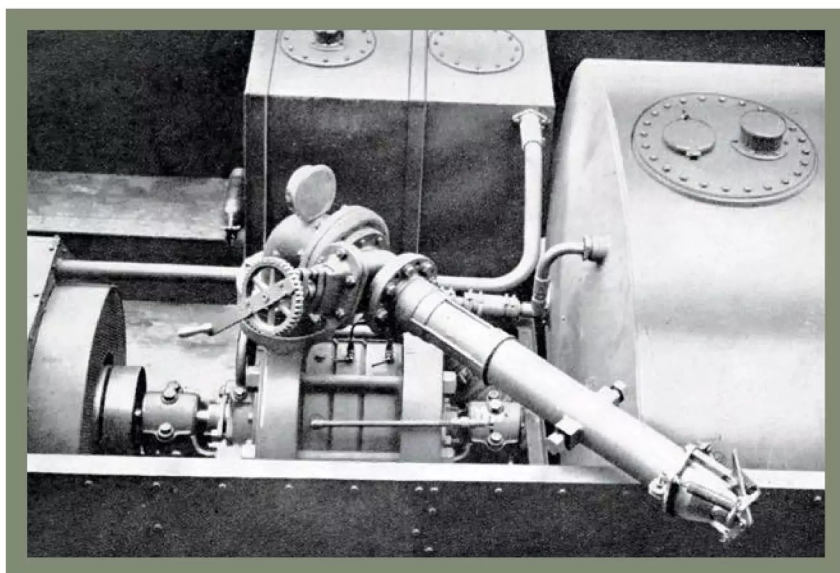
Working in collaboration with the Petroleum Warfare Department, Lagonda eventually managed to produce a unit that could pump burning petroleum fuel a distance of 360 feet (110m). Although indisputably a fearsome weapon, at the time there was no clear application for the equipment and it wasn't until 12 months after the initial demonstration, in July 1941, when the unit was shown to be capable of firing at a high angle into the air. This suggested that there might be a role in the protection of shipping against low-level attack. An initial order was placed by the Admiralty, for what was described as the Mk I vertical flame-thrower, with the equipment designed to be used from the decks of ships. Three months later, in September 1941, it was suggested that the flame-thrower might also be equally effective in defending airfields against low-flying attacks.

Lagonda designed and constructed an experimental armoured vehicle, initially using a Commer chassis, on which was mounted a small rotating turret carrying a pair of flame-throwers that could project eight gallons (36 litres) of burning fuel a second at a range of 300 feet (91.5m) using a Napier Lion engine driving a Mather & Platt multi-stage pump. This led to the production of a modest number of vehicles known as the 'Cockatrice'... a fire-breathing mythical dragon with a rooster's head!

The first of these used a Bedford QL 3-ton 4x4 chassis and was described as the 'light Cockatrice', whilst the 'heavy Cockatrice' was constructed by Lagonda on the chassis of the 6x6 AEC Model O854 which was also being used as

an aircraft refueller and mobile crane mount. The vehicle was stripped of its normal cab and body and was fitted

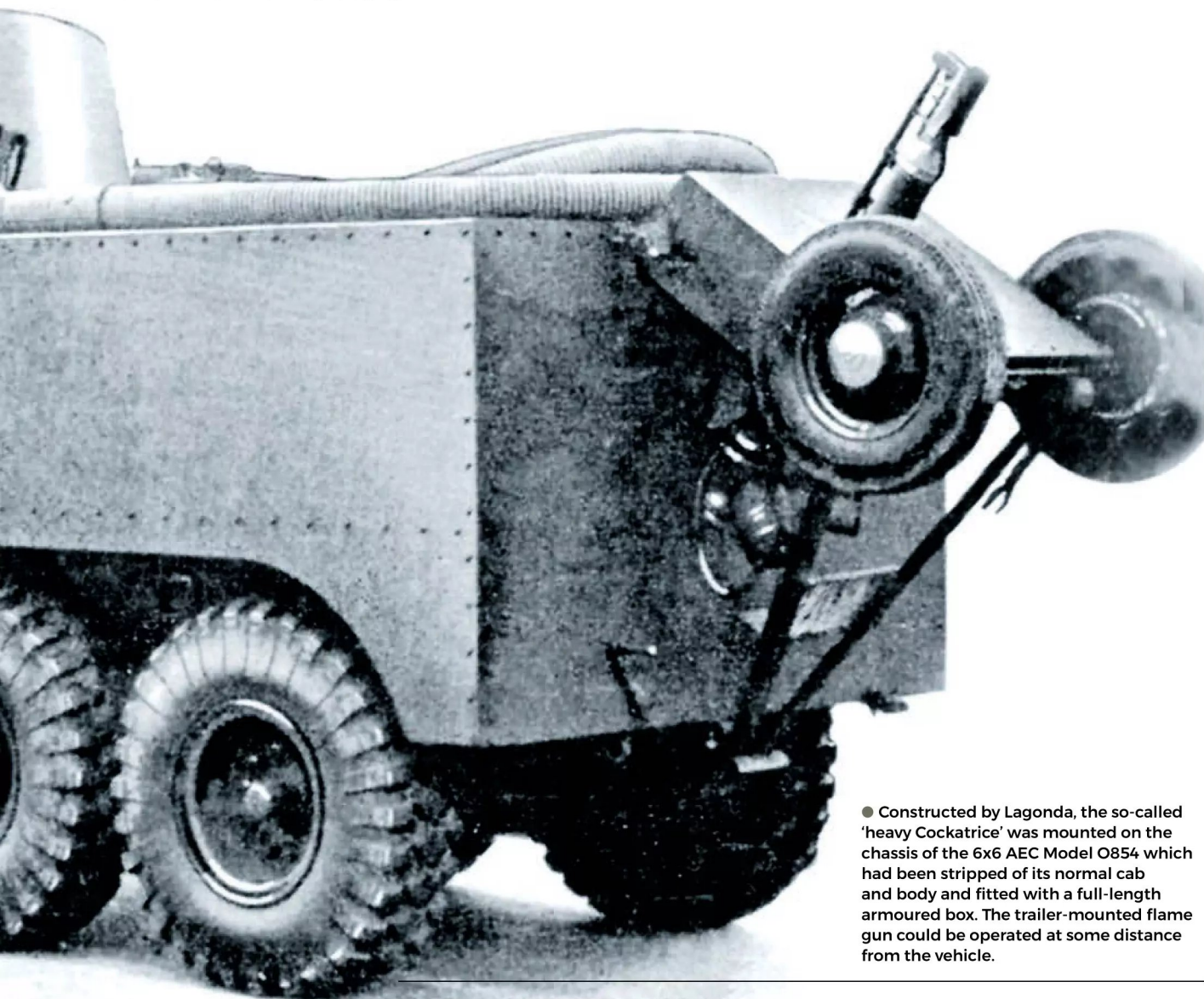




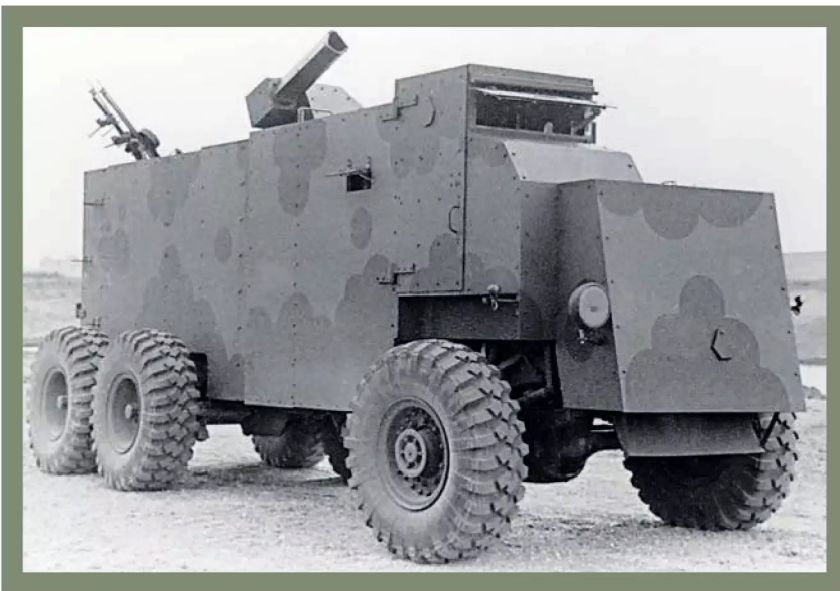
● In the second version, constructed by AEC, the flame gun was mounted inside the body and the fuel tank was moved to the rear. The Napier engine that drives the pump can just be seen to the left of the photograph.

with a narrow box-shaped armoured body. A large fuel tank, together with pumping equipment, was installed in the rear; the flame gun was trailer mounted and could be operated at some distance from the vehicle. Twin anti-aircraft machine guns were mounted on the edge of the body.

Subsequent versions were produced by AEC, and were known as the Mk 1A. These dispensed with the trailer, and had the flame gun mounted directly to the pumping equipment and, on at least some examples, the wheels were outside the width of the vehicle. The Army showed little interest in the Cockatrice and fewer than 10 examples, possibly as few as six, were constructed, all of which were allocated to RAF airfields.



● Constructed by Lagonda, the so-called 'heavy Cockatrice' was mounted on the chassis of the 6x6 AEC Model O854 which had been stripped of its normal cab and body and fitted with a full-length armoured box. The trailer-mounted flame gun could be operated at some distance from the vehicle.

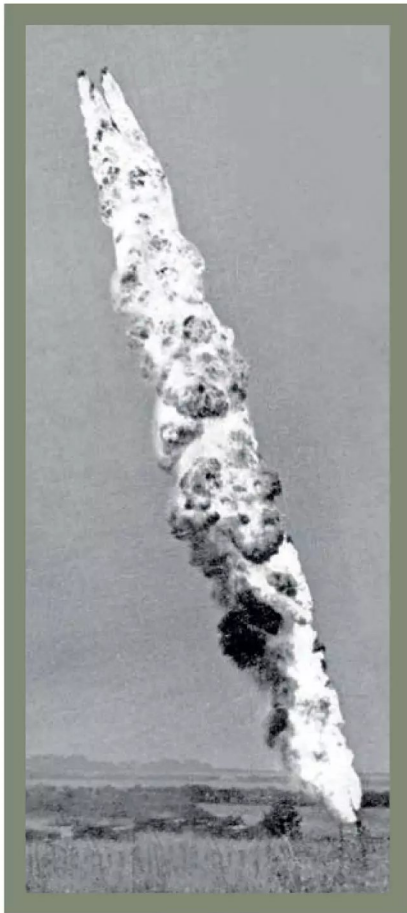


● ABOVE Although no more than 10 examples were constructed, the production versions of the 'heavy Cockatrice' had a narrower armoured body with exposed wheels. As well as the flame gun, there were twin anti-aircraft guns mounted in a separate compartment at the rear.

Subsequent flame-thrower trials showed that a gas-operated system was better and this led to the development of what became known as the Churchill Crocodile which was capable of emitting burning fuel at a rate of more than six gallons (28 litres) a second. AEC attempted to adapt the flame-throwing equipment used in the Crocodile for use in the Mk 2 heavy armoured car. The prototype was nicknamed Basilisk – another of the names of the mythical Cockatrice – but did not progress beyond the prototype stage.

● BELOW 'Heavy Cockatrice' in action. Note the rear-mounted anti-aircraft guns.





TECHNICAL SPECIFICATION

Production: 1941.

Automotive details:

Engine: AEC A196; 7580cc (463in³); six cylinders; bore and stroke, 105x146mm; indirect-injection diesel; overhead valves; power output, 95bhp (71kW).

Transmission: 4F1Rx2; 6x6.

Suspension: live axles, front and rear on semi-elliptical multi-leaf springs, inverted at the rear.

Brakes: hydraulic, with vacuum servo-assistance.

Electrical system: hybrid 12V/24V.

Dimensions

Length, 304in (7722mm); width, 94in (2388mm); height, to top of tank 130in (3302mm).

Wheelbase, 177in (4496mm).

Bogie centres: 51in (1295mm).

Weight, not available.

Performance: maximum speed, governed 29mph (47km/h).

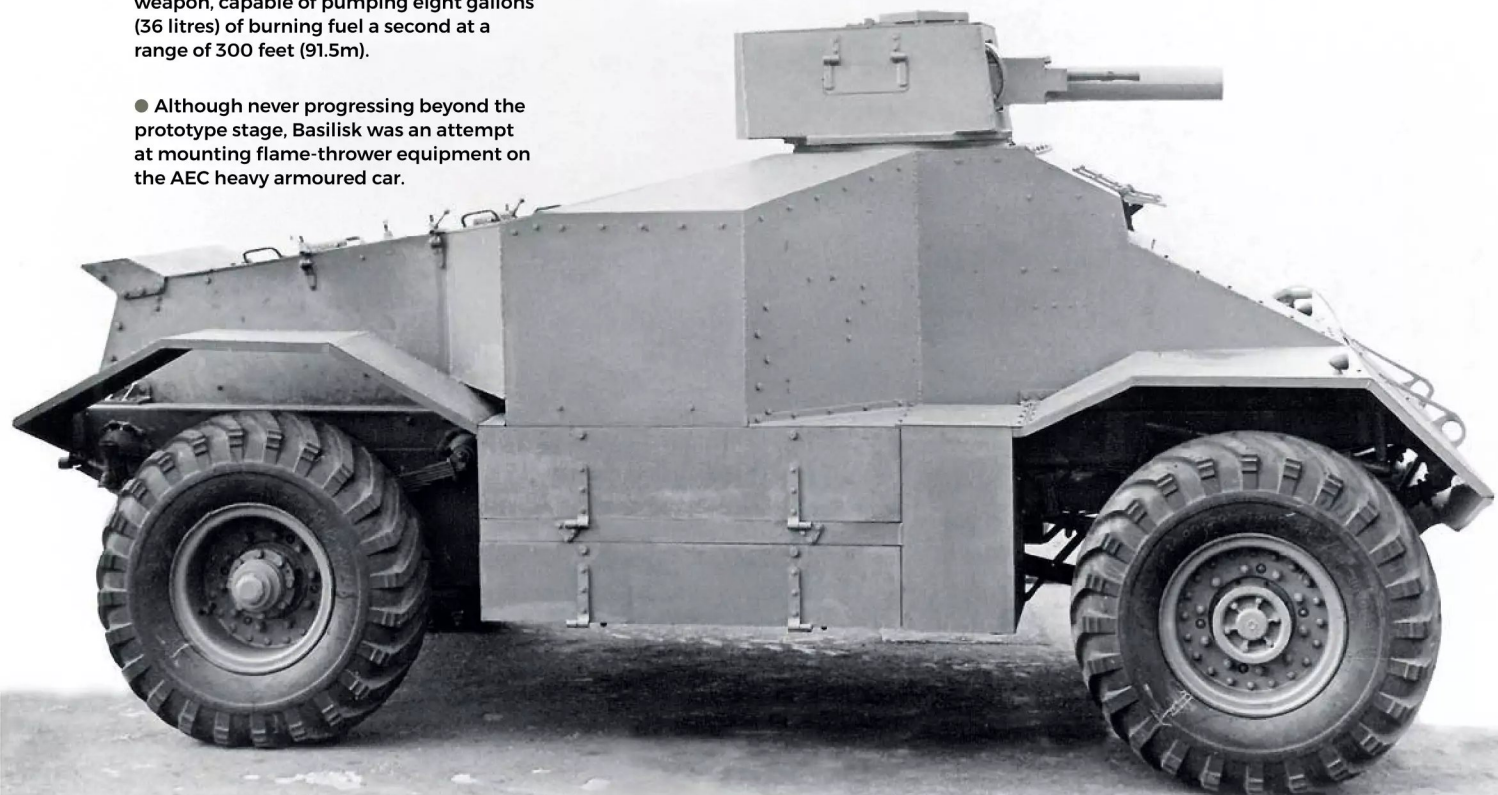
Variants

Flame-thrower, heavy pump unit, 6x6

Armoured car, flame-thrower, 4x4

- The flame-thrower was a fearsome weapon, capable of pumping eight gallons (36 litres) of burning fuel a second at a range of 300 feet (91.5m).

- Although never progressing beyond the prototype stage, Basilisk was an attempt at mounting flame-thrower equipment on the AEC heavy armoured car.



DEACON

A 6-pounder (57mm) self-propelled gun

The AEC Mk I Gun Carrier, known as Deacon, was an attempt to make the 6-pounder (57mm) anti-tank gun into a self-propelled artillery piece. A total of 175 examples were constructed during 1942 and 1943, and were employed only during the North African Campaign where they were apparently known as the 'Yellow Devils'. The vehicle consisted essentially of a Matador chassis on which was mounted a rudimentary armoured body constructed by Park Royal Vehicles, together with a quick-firing (QF) 6-pounder (57mm) gun, operating from behind an enclosed three-sided armoured shield.

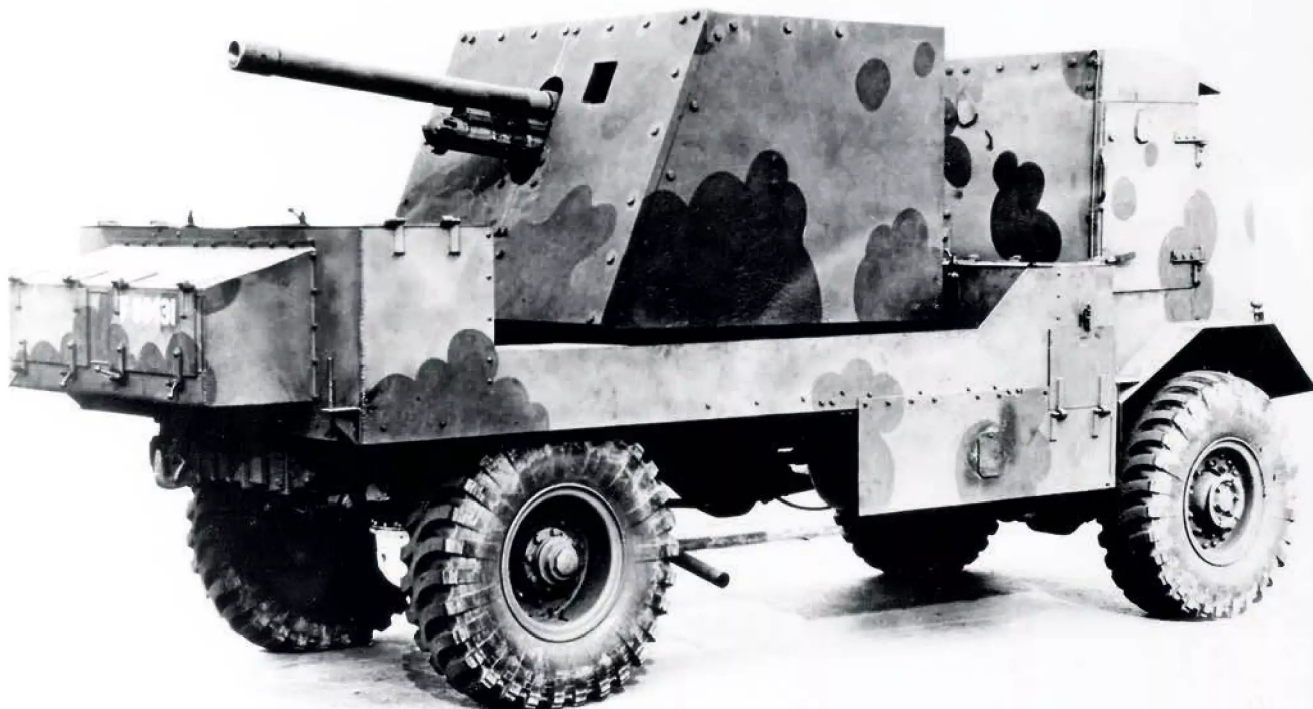
A logical development of the 'portee' principle, in which smaller artillery pieces were carried on the backs of trucks, this was not a handsome vehicle. Surviving photographs show a single-seat armoured cab with an armoured box alongside for the engine, and with the gun enclosure mounted on a rotating turntable. Curious triangular stowage boxes were fitted to all four corners of the body, the shape being necessitated by having to provide clearance for the rotating turret. Cab armour was a paltry 6mm, whilst the

gun turret was constructed from 20mm plate. Some sources suggest that a crew of five men was required, but it is hard to see where they would have ridden.

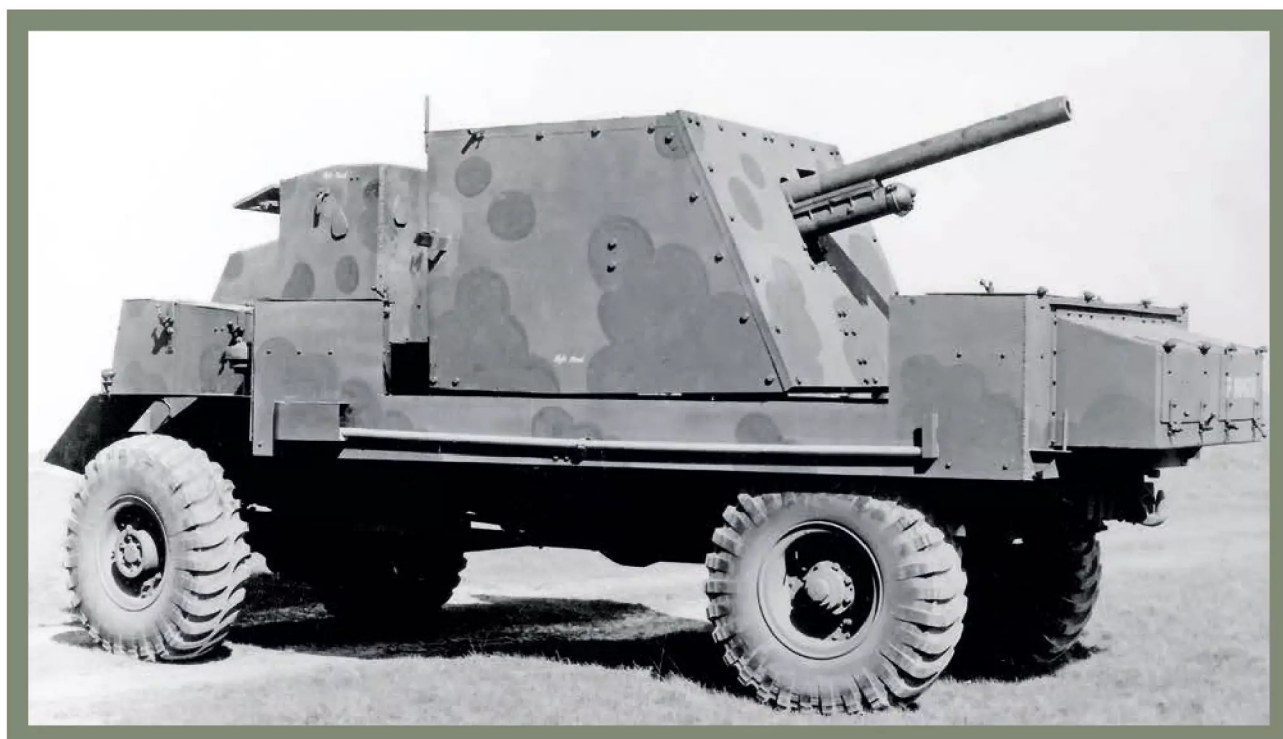
The quick-firing 6-pounder (57mm) gun was capable of firing high-explosive and armour-piercing rounds, the latter effective against a maximum 135mm of armour. The maximum rate of fire was 15 rounds per minute, the effective firing range was 1650 yards (1510m), and the maximum range was 5000 yards (4600m). A total of 24 rounds were carried in the turret.

With the AEC A173 six-cylinder engine, four-speed gearbox and two-speed transfer case of the Matador, the chassis was little changed for this role and, at least this ensured that the Deacon was reasonably manoeuvrable. Unfortunately, its height made it a rather obvious target in the North African terrain... even though a number were fitted with a camouflaged cover

● The Deacon was a self-propelled artillery piece, consisting of a 6-pounder gun mounted on what was effectively a Matador truck chassis. The gun was operated by the gunner and loader from behind the enclosed armoured shield.



● The standard Matador truck cab was replaced by an armoured box that covered the engine and the driver's position.



● Soft-steel mock-up for the Deacon self-propelled gun. Entering service in May 1942, the 6-pounder (57mm) gun was capable of firing at a maximum rate of 15 rounds a minute, and with armour-piercing ammunition could penetrate 135mm of armour at a distance of 330 feet (100m).

● With the truck disguise in place, the Deacon is not easily identified as a self-propelled gun from the air and is thus considered a less significant target.



● Fitting the lightweight side panels developed to disguise the Deacon as a truck.



that made the vehicle appear to be a standard GS cargo truck. And the increase in weight due to the armoured body, plus the weight of the gun, had a negative effect on the maximum speed but, at least, the vehicle's range was a creditable 155 miles (250km).

Never more than a stopgap attempt at getting more anti-tank guns into the fray, at the end of the North African campaign, the Deacon was considered obsolete and saw no further action. A number had the guns removed and were converted to open-backed armoured ammunition carriers, others were refurbished in Egypt and sold to Turkey.

● Deacon, stripped of its 6-pounder (57mm) gun, and converted to an armoured ammunition carrier.

TECHNICAL SPECIFICATION

Production: 1942-43.

Automotive details

Engine: AEC A173; 7580cc (463in³); six cylinders; bore and stroke, 105x146mm; indirect-injection diesel; overhead valves; power output, 95bhp (71kW).

Transmission: 4F1Rx2; 4x4.

Suspension: live axles, front and rear on semi-elliptical multi-leaf springs.

Brakes: vacuum servo-assisted hydraulic.

Electrical system: hybrid 12V/24V.

Dimensions

Length, 255in (6477mm); width, 109in (2769mm); height 115in (2921mm).

Wheelbase, 151in (3835mm).

Combat weight, 27,328 lb (12,422kg).

Performance: maximum speed, governed 19mph (31km/h).

Variants

Gun carrier, 6-pounder, Mk 1



MILITANT MK 1

The son of the Matador... and then some!

Rated at 10 tons and produced in both 6x6 and 6x4 configurations, development of the AEC Militant Mk 1 started in 1951, with production and the first deliveries getting underway the following year. It was produced largely from commercial components and was quite recognisably based on the earlier 6x6 Matador/Marshall hybrid that had been supplied to the RAF during WW2. Although originally conceived as a GS cargo truck, the Militant family, designated as the FV11000 series, eventually included medium and heavy artillery tractors, end and three-way tippers, a tractor unit for semi-trailers, fuel tanker, and mobile-crane variants.

Commonly known as 'knockers' when in service, because of the rhythmic sound of the low-revving diesel engine when idling, the Militant was a handsome machine, albeit, at the same time, somewhat old fashioned. But, it was also extremely versatile, with more than 20 variants eventually being produced in a choice of two wheelbase lengths, and in two basic chassis configurations. The total number produced over a 13 year period was 3200, around 10% (349 examples) of which were artillery tractors. Some examples remained

in service into the 'nineties, with the Royal Engineers ending up as the largest users.

All variants were powered by the same engine, an AEC A223 six-cylinder overhead valve unit of 11,310cc (690in³) with a power output of 145bhp (108kW), driving the rear wheels (Model O859), or the front and rear wheels (model O860), via a five-speed gearbox and two-speed auxiliary gearbox which also provided the transfer gears for the 6x6 variants. The front axle was carried on multi-leaf semi-elliptical springs, whilst the

● FV11007 was a short-wheelbase Militant 6x6 cargo variant; note how, on late production versions, the headlights are mounted above the front bumper.





● Towards the end of their lives, some Militants had the underbody reinforced, and were fitted with a HiAB hydraulic crane and used for transporting containers or container bodies.

rear bogie was centrally pivoted and the springs were inverted. The rear suspension and axles of the crane and excavator variants, FV11003, FV11013 and FV11014, consisted of unsprung walking beams. Conventional air-pressure brakes were fitted, and the worm-and-nut steering system lacked power assistance, making slow-speed manoeuvring rather hard work.

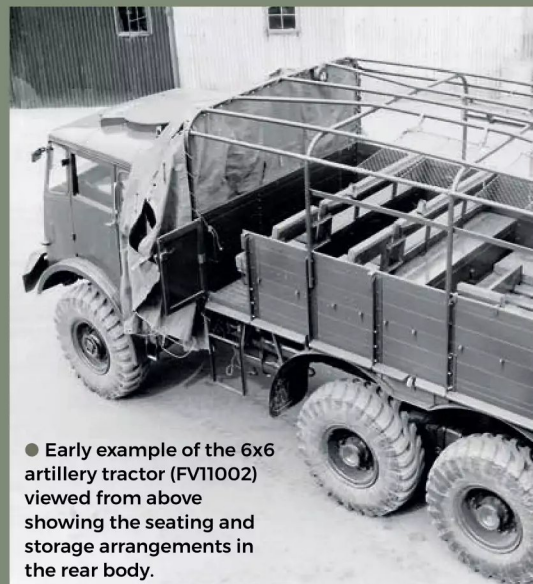
The chassis consisted of a pair of parallel side-members, with a strengthening flitch plate over the rear bogie. A Turner 5- or 7-ton vertical-drum winch was installed between the chassis members, immediately behind the auxiliary gearbox, and was driven



● GS cargo truck with the drop-down sides removed to provide a flat platform.



● With its six big wheels and imposing AEC radiator, few would argue that the Militant has considerable presence. (*Simon Thomson*)



● Early example of the 6x6 artillery tractor (FV11002) viewed from above showing the seating and storage arrangements in the rear body.



● Constructed on the short-wheelbase chassis, FV11005 was a three-way 7yd³ (5.35m³) tipper, with a body manufactured by Edward Brothers (Tippers) Limited.



● Three-way tipper with the body in the travelling position.





● FV11002 artillery tractor with the canvas covers in place. Note the needlessly-complex shape of the rear mudguard.



● Medium/heavy 6x4 artillery tractor (FV11001). Note the tiny sidelights and the lack of electrical turn signals; there are semaphore indicators just ahead of the rearmost grab handle on the cab.

by worm gears and chain to a power take-off shaft on the auxiliary gearbox itself.

Fronted by the iconic AEC radiator, the two-man forward-control cab was not unlike that used on the Matador, but the timber frame was now replaced by steel, and the external panels were double-skinned, with insulation incorporated between the two skins. There was an observation hatch in the cab roof, and the passenger seat could be folded to provide a platform that allowed the passenger to operate an anti-aircraft gun. A joint at the waist rail allowed the overall height of the vehicle to be reduced for shipping.

The rear body differed according to the designated role, with the first examples to appear being the GS cargo truck which carried a drop-side steel-panelled body, constructed in 14-foot (4270mm) and 18-foot (5490mm) lengths, and provided with canvas top and side covers. Towards the end of their lives, some of these trucks had the underbody reinforced, and were fitted with a HiAB hydraulic crane and used for transporting containers or container bodies. In this configuration, the vehicle was described as 'crane appliance, lorry mounted' (CALM).

By 1954 the cargo vehicle had been joined by a gun tractor intended as a towing vehicle for medium and heavy



● 6x6 artillery tractor being put through its paces at the 1954 exhibition of British military vehicles at Chertsey.



● Militant Mk 1 chassis fitted with a fully-slewing Coles 7-10 ton bridging crane. Note the modified windscreen and the shape of the cab roofline.



● Looking decidedly the worse for wear, this surplus artillery tractor (FV1002) has clearly seen some heavy post-military service. (Phil Moth)

● Rear three-quarter view of the FV1005 tractor for semi-trailer.

field artillery pieces up to 16 tons (16.29 tonne) in weight; for example, the 40mm Bofors anti-aircraft gun and the 5.5in and 7.2in howitzers, all three very much of WW2 vintage. The artillery tractor was equipped with a wood and steel composite body constructed by Crossley Motors, and designed to accommodate a gun crew of nine men; there was also space for 10,000 lb (4500kg) of ammunition and stores. A removable canvas tilt over the rear body provided shelter for the crew and helped to disguise the tractor as a standard GS cargo vehicle. A 5- or 7-ton Turner winch was mounted between the main chassis rails.

There were two types of mobile crane, equipped with either a 7-ton



● Front three-quarter view of the FV1005 6x6 tractor for use with 10-ton FV2700 series semi-trailers.



● With chassis modifications by All-Wheel Drive Limited of Camberley, FV11014 was equipped to carry a Blaw Knox excavator. Note the split cab to allow the excavator jib to be transported in the lowest possible position. (Phil Moth)



● Militant Mk 1 6x4 tanker (FV11009) photographed at the 1954 exhibition of British military vehicles at FVRDE's Chertsey site.



● Comprehensively rebodied by the RAF, this 6x4 Militant Mk 1 served as an aircraft refuelling tanker.



● Equipped with a Reynolds Boughton hydraulic crane, this Militant 10-ton recovery vehicle was photographed at the AEC Southall works. Although it resembled the British Army Militants in most respects, the 'Brits' did not use such a vehicle and, I'm afraid, I do not know who this vehicle served with. The opening windscreen would suggest that the ultimate destination was hot!



diesel-electric Coles Mk 5 or Mk 7, or a 6-ton petrol-engined Jones KL66 fully-rotating crane, and a mobile excavator, jointly produced by AEC and All-Wheel Drive Limited, mounting a Blaw-Knox BK50 Mk 3 dragline excavator, or similar equipment.

Other variants included two types of tipper truck; FV11004 was an end tipper, whilst FV11005 had three-way tipping gear. In both cases the 7yd³ (5.35m³) steel body was manufactured by Edward Brothers (Tippers) Limited and could be held at any angle during the tipping operation. There was

● Rear three-quarter view of the Militant recovery vehicle showing the sliding jib, support jacks, and the rear-mounted earth anchor.



● Another Militant-based military recovery vehicle, again destined for an unknown customer, but this time fitted with Mann Egerton recovery equipment. Mann Egerton, who were based in Norwich, also supplied a variation of this kit on the normal-control Model O857 chassis.



● Impressively rebodied with the front end of a Bristol RE single-decker bus, this Militant Mk 1 was photographed in the service of Trent Motor Traction Company, where it was employed for recovery work. (Phil Moth)

MILITANT MK 1

also a tractor for semi-trailer; and a 2500-gallon (11,350 litre) fuel tanker, some of which were rebuilt for air-portability. Prototype and development vehicles, fitted with a self-loading tipping platform, were produced for the Royal Engineers.

During the mid-fifties, the Militant chassis was also used by AEC as the basis for the Mk 1 'Dumptruk', and the Militant chassis was also supplied to other military and commercial customers.

- Militant Mk 1 6x4 chassis.

- Preserved Militant Mk 1 cargo variant with the drop sides removed to present a flat platform. (*Simon Thomson*)



TECHNICAL SPECIFICATION

Production: 1952-64.

Automotive details

Engine: AEC A223; 11,310cc (690in³); six cylinders; bore and stroke, 130x142mm; direct-injection diesel; overhead valves; power output, 145bhp (108kW).

Transmission: 5FIRx2; 6x4 or 6x6, according to model.

Suspension: live axles, front and rear on semi-elliptical multi-leaf springs; telescopic shock absorbers at front; springs inverted at rear; mobile cranes and excavator equipment with unsprung walking-beam rear axles.

Brakes: compressed air.

Electrical system: 24V.

Dimensions (Model 0860, artillery tractor, FV11002)

Length, 289in (7353mm); width, 96in (2438mm); height 116in (3063mm).

Wheelbase, 155in (3924mm).

Bogie centres, 54in (1372mm)

Weight, unladen, 23,072 lb (10,487kg); laden, 34,562 lb (15,710kg).

Dimensions (Model 0859, 18ft cargo vehicle, FV11008)

Length, 338in (8585mm); width, 98in (2489mm); height 142in (3607mm).

Wheelbase, 192in (4880mm).

Bogie centres, 54in (1372mm)

Weight, unladen, 23,184 lb (10,538kg); laden, 45,542 lb (20,700kg).

Dimensions (Model 0860, tractor for semi-trailer, FV11010)

Length, 261in (6639mm); width, 96in (2438mm); height 112in (2845mm).

Wheelbase, 155in (3924mm).

Bogie centres, 54in (1372mm)

Weight, unladen, 20,400 lb (9273kg).

Performance: maximum road speed, 25mph (40km/h); off-road, 12mph (19km/h).

Variants

FV11001. Tractor, 10 ton, 6x4, GS, medium/heavy anti-aircraft

FV11002. Tractor, 10 ton, 6x6, GS, medium/heavy anti-aircraft

FV11003. Truck, 10 ton, 6x6, GS, with 7-ton Coles crane

FV11004. Truck, 10 ton, 6x4, GS, tipper

FV11005. Truck, 10 ton, 6x4, GS, tipper, three-way

FV11006. Truck, 10 ton, 6x4, GS, fuel tanker, 2500 gal

FV11007. Truck, 10 ton, 6x4, GS, cargo, drop-side, 14ft

FV11008. Truck, 10 ton, 6x4, GS, cargo, drop-side, 18ft

FV11009. Truck, 10 ton, 6x4, GS, fuel tanker, 2500 gal

FV11010. Tractor, 10 ton, 6x6, GS, for semi-trailer

FV11011. Truck, 10 ton, 6x6, GS, crane, missile

FV11012. Truck, 10 ton, 6x4, GS, cargo, drop-side

FV11013. Truck, 10 ton, 6x4, GS, with 6 ton Jones crane

FV11014. Truck, 10 ton, 6x6, GS, excavator

FV11015. Tractor, 10 ton, 6x6, GS, for semi-trailer

FV11016. Truck, 10 ton, 6x6, GS, cargo, drop-side, 18ft

FV11017. Truck, 10 ton, 6x4, GS, self-propelled launcher

FV11018. Truck, 10 ton, 6x6, GS, cargo, with winch

FV11019. Truck, 10 ton, 6x4, tanker HTP, 1500 gal

FV11021. Truck, 10 ton, 6x6, GS, tipping platform, self-loading, RE

MILITANT MK 2 & MK 3

**An up-to-the minute Militant...
and one that was almost fitted with a multi-fuel engine**

In the early 'sixties, AEC made a half-hearted attempt at producing an improved Mk 2 Militant which was intended to incorporate a multi-fuel engine, as well as including a number of other modest changes. However, production was cancelled after just a handful of prototypes had been produced. In 1963, the Fighting Vehicles Research & Development Establishment (FVRDE) issued a specification for a more up-to-date Mk 3 Militant and, although work on the multi-fuel engine was never brought to fruition, the Mk 3 finally began to appear in production form in 1966, with a total of 611 examples constructed, some of which may have been supplied to commercial customers. Of the total number of Militant Mk 3 trucks produced, 200 were recovery tractors.

Work on the Militant Mk 2 was initiated at FVRDE in February 1959 when AEC presented their proposals for updating the vehicle. The main and auxiliary gearboxes were to be replaced by

heavier-duty units, the track was to be increased to enhance stability and the cab was to be redesigned to improve creature comforts. But, the most significant change was the proposal that a multi-fuel engine be adopted.

Ultimately, just 10 prototypes, six of which were cargo vehicles and four artillery tractors, were produced before the project was abandoned... and, at this stage, no satisfactory multi-fuel engine was available.



● Factory shot of the chassis-cab for the Militant Mk 3 cargo vehicle (FV11042).

● Prototype Mk 3 cargo vehicle on trial at Bagshot.



One of the Mk 2 tractors was fitted with an AEC AV690 diesel engine that had been modified to allow it to run on alternative fuels. Despite considerable road testing, it was not successful, and there never was a multi-fuel engined Militant.

In March 1963, FVRDE produced documentation describing a further improved Militant which was eventually produced as the Mk 3. AEC responded with a presentation document in July, setting out the key features of what was described as a 'new vehicle', in some detail. The chassis, which was based on proven commercial components, was to be powered by the AEC 2AV690 unit, and was available in two wheelbase lengths; all three axles were fitted with differential locks, as well as having inter-axle locks; and the cab was further improved when compared to the Mk 2. It was planned that artillery tractor, recovery tractor, fifth-wheel tractor for semi-trailer, cargo truck,

● Matt-finished, fully-sheeted cargo variant. The body sides could be removed to provide a flat load bed. The number plate bears the legend W7081 which, presumably, is the contract number.





● Stencilled with the legend 'MVEE Trials Vehicle', this cargo truck was originally supplied to Chertsey in chassis-cab form. Note the additional cooling vents fitted into the left-hand side of the cab front.



● Privately-owned FV1044 medium recovery tractor photographed in the arena at the annual War & Peace Show. (Simon Thomson)



● In typical ex-auction condition this recovery tractor is ripe for restoration... although, like many of these vehicles, there was a time when it might have been used for heavy recovery work.



● The recovery variant started to be delivered from about 1970 to replace the ageing Scammell Explorer. It may well have been AEC's last purpose-made military vehicle. (Simon Thomson)

tipper, and fuel tanker variants would be produced.

Although the nominal manufacturer was said to be AEC, the company was at some pains to point out that the axles were produced by The Maudslay Motor Company, and the gearboxes came from Transport Equipment (Thornycroft), with all three companies forming what was described as the Associated Commercial Vehicles 'chassis group'.

And, notwithstanding AEC's impressive list of a half-dozen variants, in the end just two went into production... a 10-ton drop-side cargo vehicle, available in right-hand drive and left-hand drive versions, the latter intended for the British Army of the Rhine (BAOR) in West Germany, and a medium recovery vehicle.

The Mk 3 was prototyped with both a multi-fuel 2AV690 engine, which



● Despite the rust at all of the seams and the holes along the bottoms of the cab doors, this vehicle looks to be largely complete and is another candidate for restoration. (Phil Moth)



● Photographed at AEC's Southall plant, 86ET79 shows how the recovery tractors looked when they were new... notwithstanding the fact that the word 'reject' is stencilled onto the windshield.



- Excellent view of the huge amount of equipment carried by the recovery variant; note the sliding jib, combined with hydraulic power, that was used to raise and lower the jib arm itself. (*Simon Thomson*)



- The Militant Mk 3 has proved to be surprisingly popular with enthusiasts who have a taste for heavier vehicles. (*Simon Thomson*)



- The oversized tyres combine with the generally short and chunky appearance of the recovery variant to render it almost toy-like.

produced 150bhp from a capacity of 11,310cc (690in³), and a mono-fuel version of the AV760 with a capacity of 12,473cc (761in³) and a power output of 226bhp (169kW). The more-powerful AV760 was eventually selected for production running on diesel fuel oil. The transmission was a completely-new unit, providing six gears, including an overdrive, with a two-speed auxiliary box. The suspension consisted of multi-leaf semi-elliptical springs, inverted at

the rear with double-action shock absorbers on the front axle. Steering gear was of the worm-and-nut pattern, with hydraulic assistance.

There was an all-steel insulated cab, of modern design, manufactured by Park Royal Vehicles, providing seating for a crew of two in the cargo vehicle, and three in the crew cab of the recovery variant. An observation hatch was provided above the passenger seat to allow the use of an anti-aircraft machine gun. The 1963 specification stated that

the cab was to be split at the waistline to reduce the overall shipping height.

The cargo truck was fitted with a drop-side steel body, constructed by Marshall's of Cambridge, with a canvas cover designed to be used at two heights, or removed altogether; the side panels could also be removed to allow the vehicle to accept containers and NATO palletised loads. A Scammell 7-ton winch was fitted under the floor, driven via the auxiliary gearbox.



● Equipped with a Reynolds Boughton mechanical winch, a sliding jib, and a substantial earth anchor, but apparently lacking hydraulics, this Militant Mk 3 recovery vehicle was designed for export customers.



● Photographed at auction, and inexplicably stripped of its recovery gear, this Militant Mk 3 awaits its fate. (Phil Moth)



● Scale model for the FV11061 heavy armoured command vehicle.

The recovery variant, which may well have been AEC's last purpose-made military vehicle, was designed by Scammell Lorries at Watford, and started to be delivered from about 1970 to replace the ageing Scammell Explorer. The vehicle was equipped with a more spacious cab, and with a steel platform body carrying a Coles dual-section extensible jib crane mounted on a vertically-pivoted post; the platform was mounted on a sub-frame that was bolted to the chassis. With the jib supported, the maximum load was 5.25 ton (5.33 tonne) at a distance of 123in (3100mm). Jib extension, luffing and slewing actions were effected by means of hydraulic rams, whilst a hydraulic winch was provided for hoisting actions. Jib stays allowed suspended towing. A cable-operated 'reactor' device was fitted to prevent undue transference of weight from the front axle during suspended towing operations, and the



● A single example of the FV11061 heavy armoured command vehicle was produced by the Royal Ordnance Factory (Leeds) in 1966.

rear suspension could be mechanically locked out when hoisting.

A heavy armoured command vehicle (FV11061) was also produced by the Royal Ordnance Factory at Leeds in 1966, using a left-hand drive short-wheelbase (150in, 3810mm) version of the Militant Mk 3 chassis. Designed

for use by command staff and signals personnel, it was intended for a similar role to the WW2 armoured command vehicles and, although shown at the Chertsey exhibition of military vehicles in 1966, it was described as a prototype and it is not clear whether there was any series production. Other variants

were proposed, including a gun tractor, bulk refueller, tractor for semi-trailer, workshop, and signals vehicles; but it appears that none was constructed.

The cargo variant was eventually superseded by the 8-ton 4x4 Bedford TM which started to enter preliminary trials in 1978. From the mid-eighties, the Foden 6x6 recovery vehicle, with EKA hydraulic lifting equipment, started to replace the recovery variant.

TECHNICAL SPECIFICATION

Production: 1966-71.

Automotive details

Engine (Mk 2 and prototype for Mk 3): AEC 2AV690; 11,310cc (690in³); six cylinders; bore and stroke, 130x142mm; direct-injection diesel; overhead valves; power output, 192bhp (143kW).

Engine (Mk 3): AEC AV760; 12,470cc (761in³); six cylinders; bore and stroke, 136x142mm; direct-injection diesel; overhead valves; power output, 226bhp (169kW).

Transmission: 6F1Rx2; 6x6.

Suspension: live axles, front and rear on semi-elliptical multi-leaf springs; telescopic shock absorbers at front; springs inverted at rear; suspension for rear axle could be mechanically locked-out on recovery variant.

Brakes: compressed air.

Electrical system: 24V.

Dimensions (Model 0860 Mk 2, artillery tractor, FV11041)

Length, 294in (7470mm); width, 96in (2440mm); height 120in (3040mm).

Wheelbase, 154in (3920mm).

Bogie centres, 55in (1397mm)

Weight, unladen, 23,300 lb (10,591kg); laden, 34,600 lb (15,710kg).

Dimensions (Model 0870 Mk 3, recovery vehicle, FV11044)

Length, 324in (8230mm); width, 99in (2500mm); height 122in (3100mm).

Wheelbase, 155in or 192in (3924mm and 4880mm).

Bogie centres, 55in (1397mm)

Weight, unladen, 46,200 lb (21,000kg).

Dimensions (Model 0870, 0880 Mk 3, cargo vehicle, FV11047)

Length, 357in (9080mm); width, 98in (2490mm); height 138in (3500mm).

Wheelbase, 192in (4880mm).

Bogie centres, 55in (1397mm)

Weight, unladen, 26,070 lb (11,850kg); laden, 48,400 lb (22,000kg).

Performance: maximum road speed, 45mph (73km/h); off-road, 15mph (24km/h).

Variants

FV11041. Tractor, 10 ton, 6x6, medium/heavy anti-aircraft

FV11042. Truck, 10 ton, 6x6, GS, cargo, drop side

FV11044. Tractor, 10 ton, 6x6, medium recovery

FV11047. Truck, 10 ton, 6x6, GS, cargo, drop side, with winch

The following variant was prototyped, but did not go into series production:

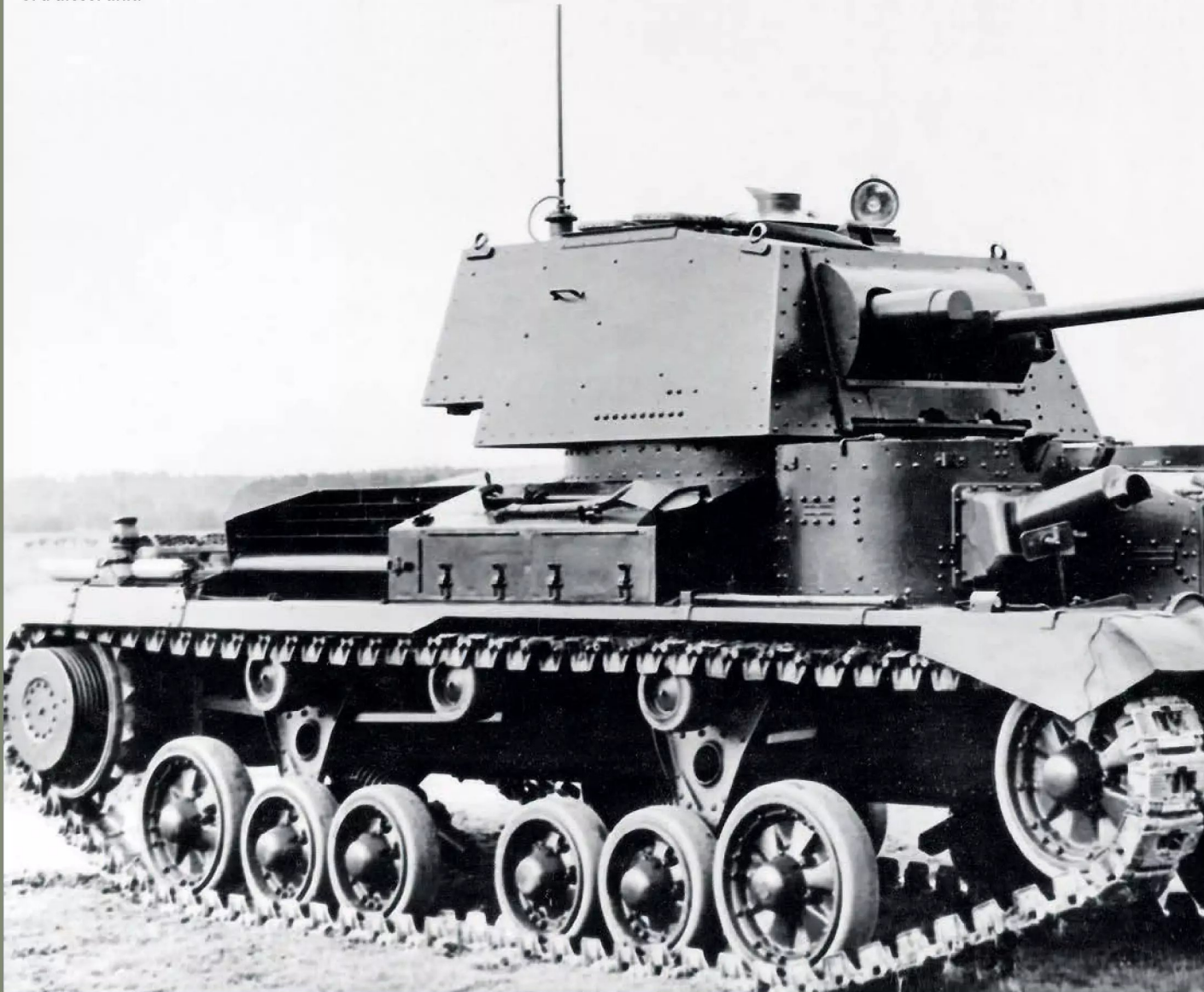
FV11061. Truck, 6x6, armoured command, heavy

TANK ENGINES

From London buses to British tanks

The most numerous British tank engine of the inter-war years was probably the Nuffield Liberty, a mighty, if somewhat old-fashioned, V12 unit producing 340bhp (250kW) from a capacity of 27,000cc (1649in³). However, other manufacturers' products were also specified, including AEC, Armstrong-Siddeley, Meadows, and, of course, Rolls-Royce. The first AEC engines were used in the mid-thirties to power the Cruiser tank Mks 1 and 2, both of which started to enter service in 1938, and the Valentine and Matilda tanks of WW2.

● The A9 cruiser tank used an AEC A179 six-cylinder engine, a petrol conversion of a diesel unit.



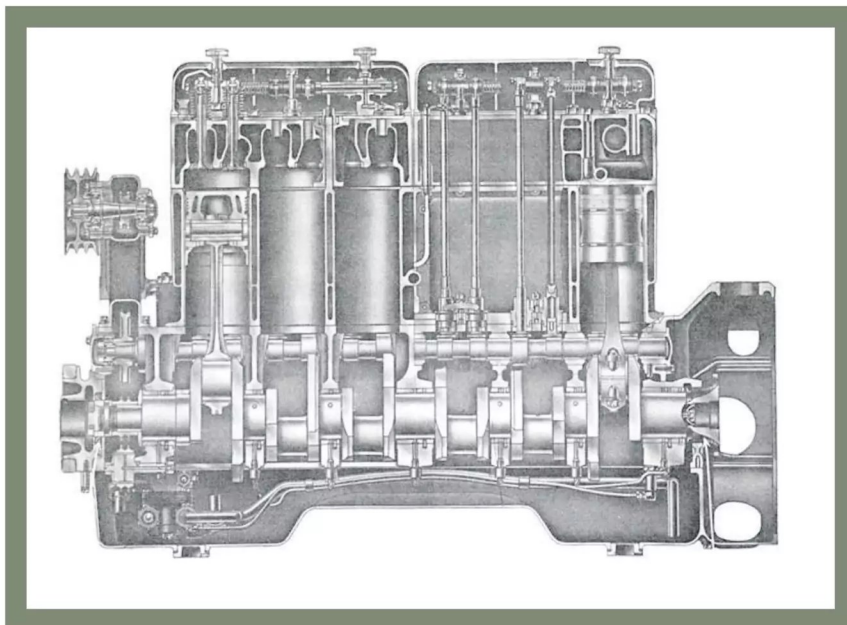


● Although the A7 medium tank was powered by an Armstrong-Siddeley engine, the A7E3 used a pair of AEC six-cylinder diesel engines, designated A170 and A171.

During the period 1933 to 1937, the Royal Ordnance Factory (ROF) produced a proposal for what was described as the 'ten ton medium tank, A7'. Although in its earliest incarnations, the A7 was powered by a 120bhp (89kW) Armstrong-Siddeley V8 engine, three examples of the A7E3 were produced in which power came from a pair of AEC six-cylinder indirect-injection diesel engines, installed side-by-side in the hull. One engine, the A170, 'borrowed' from the mid-engined AEC Q Type bus, rotated anti-clockwise; whilst

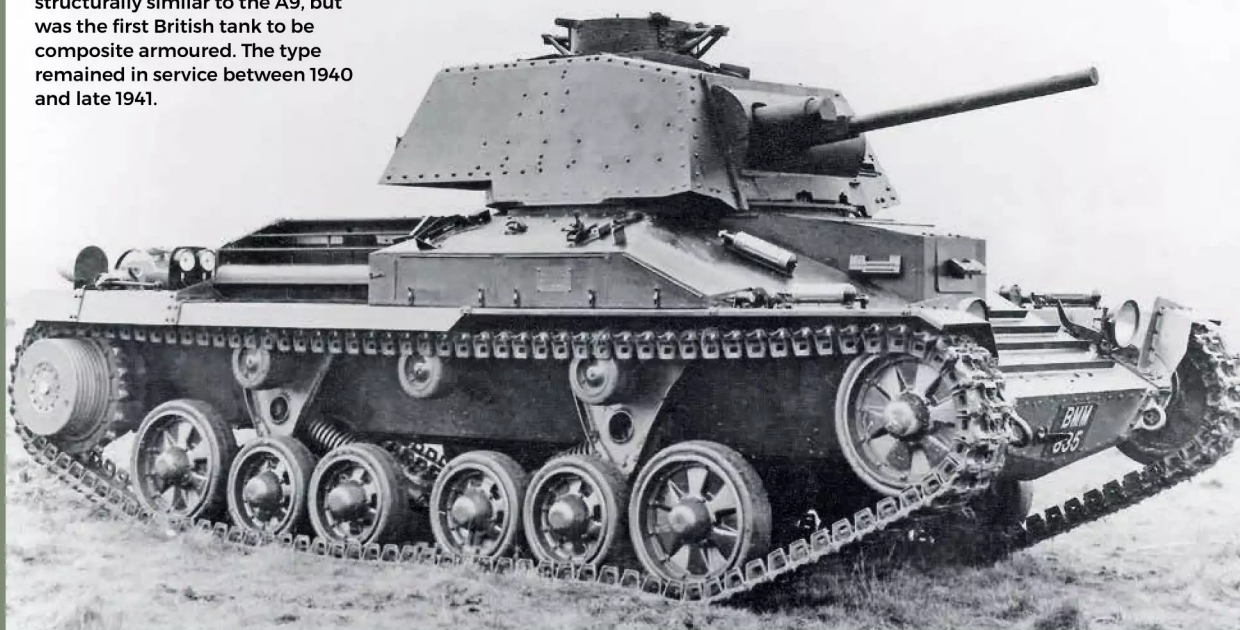
the other, normally used to power the AEC Regent bus, was designated A171, and rotated clockwise. Each engine produced 126bhp (94kW) from a capacity of 7740cc (472in³) and the Mechanization Board was at some pains to point out, incorrectly as it turned out, that this was the first time that a commercial engine – well, two commercial engines – had been used in an armoured fighting vehicle... the truth is that a pair of Tylor JB4 engines had been employed in the Whippet medium tank of 1917. Nevertheless, although the A7 acquitted itself well enough by the standards of the time, by the end of the 'thirties ideas about tank warfare had moved on. The design was seen to be obsolete, and there was no series production. At the same time that work had started on the A7, the War Office had issued a specification to Vickers-Armstrong for what was initially described as the 'medium tank, Mk 4, A9', but which was later to become the 'cruiser tank, Mk 1, A9'. The tank was powered by the AEC A179, a petrol conversion of a six-cylinder diesel unit, producing 150bhp (112kW) from a capacity of 9636cc (588in³). Only 125 examples were produced.

During 1935, Vickers started work on the 'heavy cruiser tank, Mk 2, A10', effectively a heavier 'infantry' version

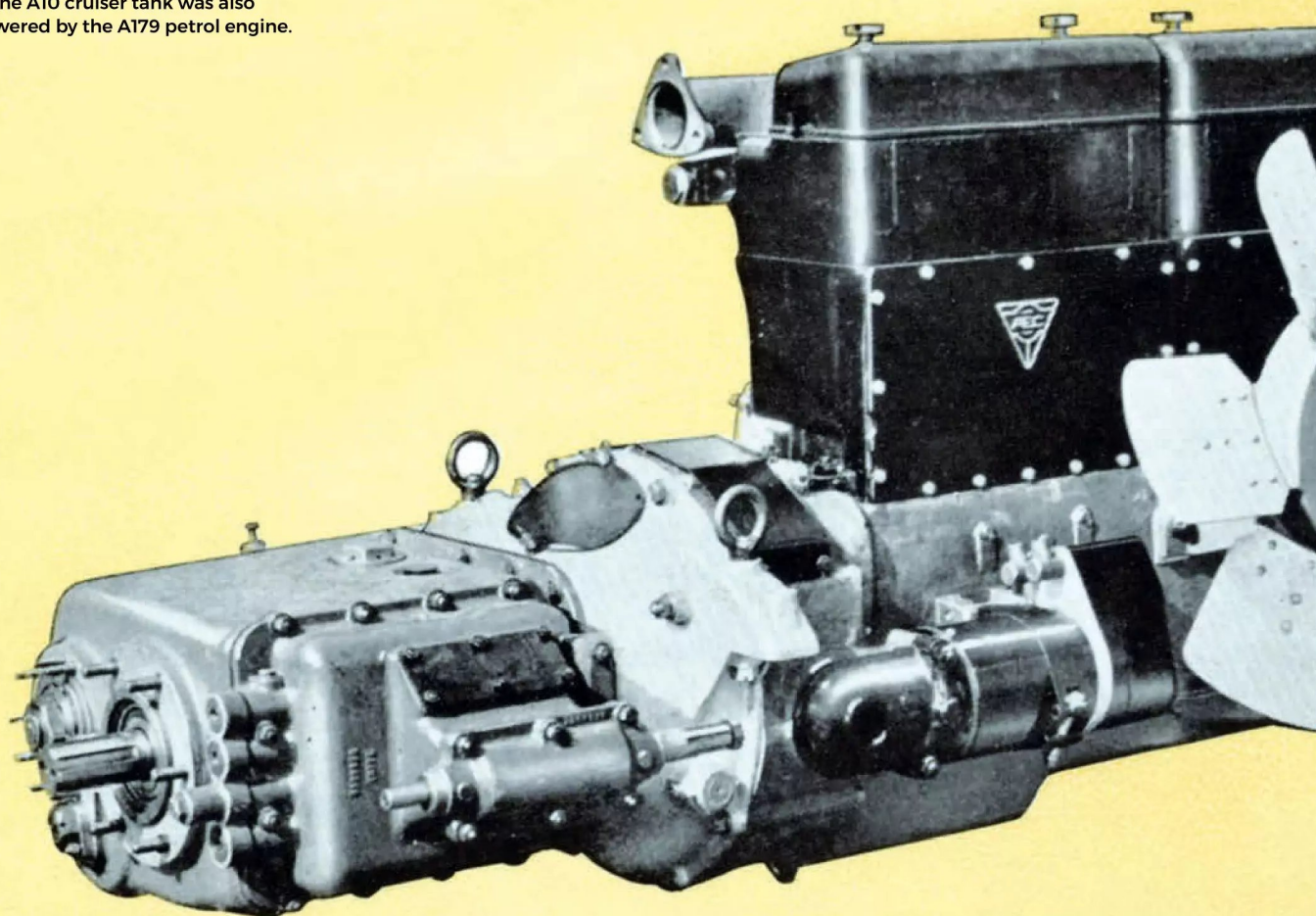


● Vertical cross-section through the A179 six-cylinder engine.

● The A10 cruiser tank was structurally similar to the A9, but was the first British tank to be composite armoured. The type remained in service between 1940 and late 1941.



● The A10 cruiser tank was also powered by the A179 petrol engine.

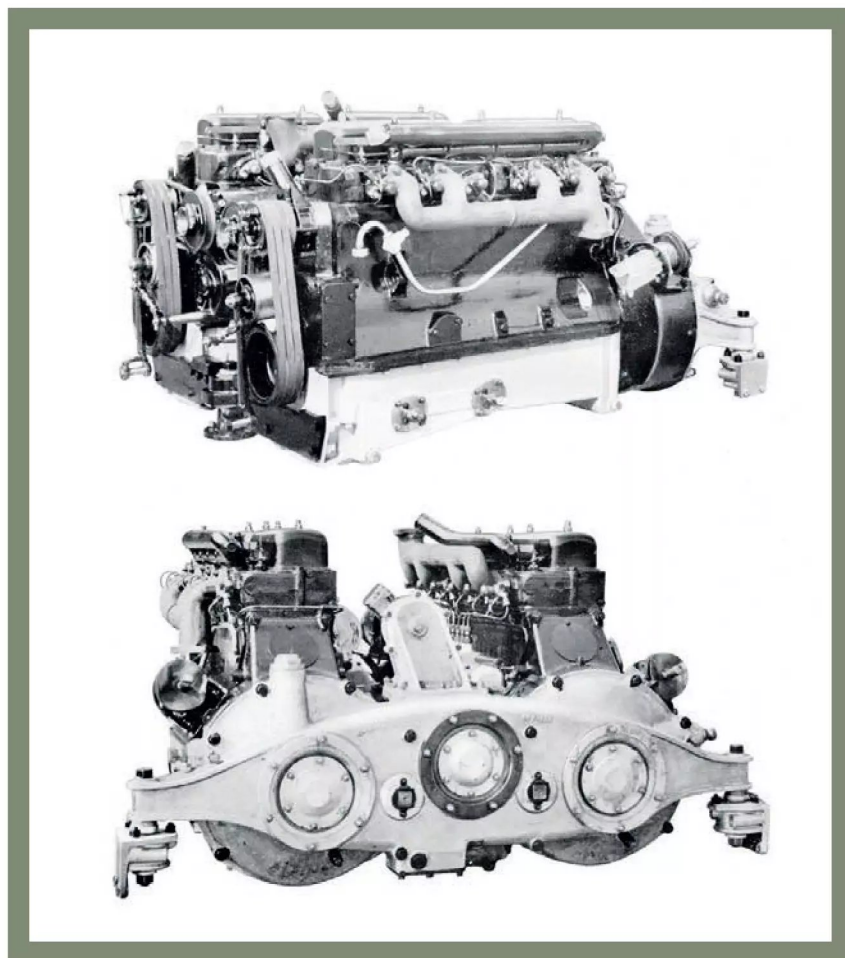




● The A12 was generally known as 'Matilda', but was more correctly described as 'infantry tank, Mk 2'. Power came from a pair of AEC diesels, A183 on the left-hand side and A184 on the right.

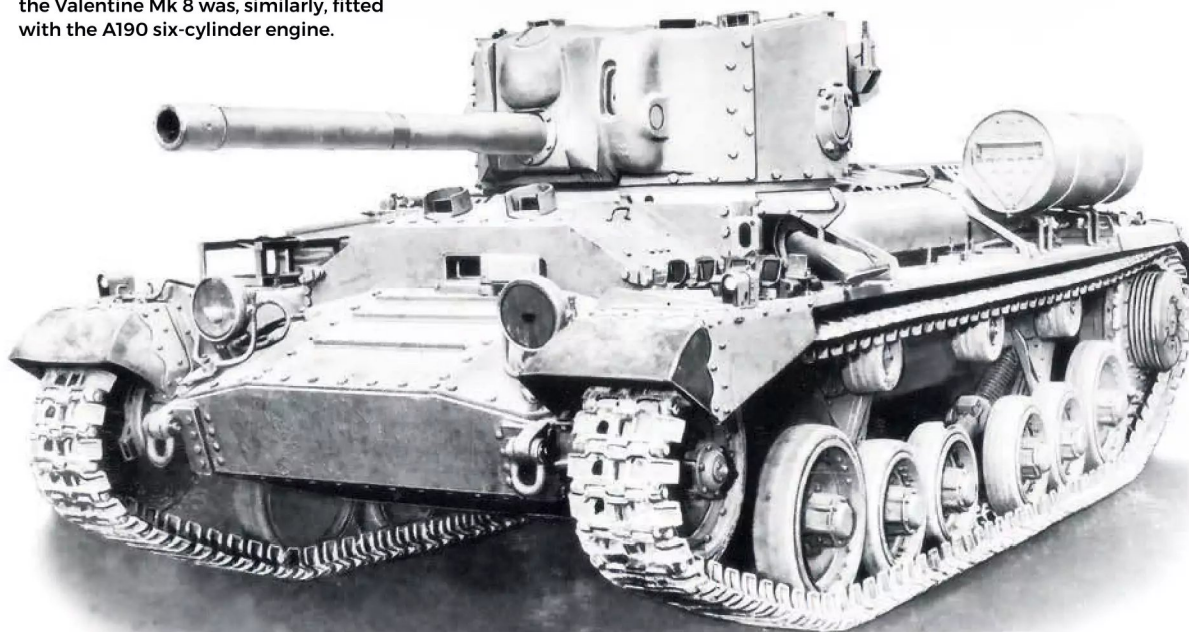
of the A9, that was also powered by an AEC A179 six-cylinder petrol engine. A total of 175 examples were constructed, and the type entered service in December 1939.

In 1936, the Royal Arsenal at Woolwich issued specification A12, for what was correctly described as 'infantry tank, Mk 2', but which was more often dubbed Matilda. Heavily armoured for the period, the Matilda used elements of the old A7 design, including the use of twin AEC six-cylinder diesel engines. In this case, the engines were designated A183 (left-hand) and A184 (right hand), with each having a power output of 100bhp (74kW) from a capacity of 6610cc (403in³). Vulcan Foundry was selected as the manufacturer and the company received a contract for two wooden mock-ups and two mild-steel prototypes in November 1936, with delivery required in April 1938. The first production order was placed shortly after initial trials were completed in June 1938, for a total of 140, but just two examples were in



● The two engines for the A12 infantry tank, A183 and A184, were assembled into a common sub-frame which incorporated a single output shaft.

● Produced in prototype form only, the Valentine Mk 8 was, similarly, fitted with the A190 six-cylinder engine.



service by September 1939, and by the time that the Matilda 3 – or ‘infantry tank, Mk 2A’ – had appeared in 1941, the AEC engines had been replaced by more-powerful Leyland E148 or E164 units.

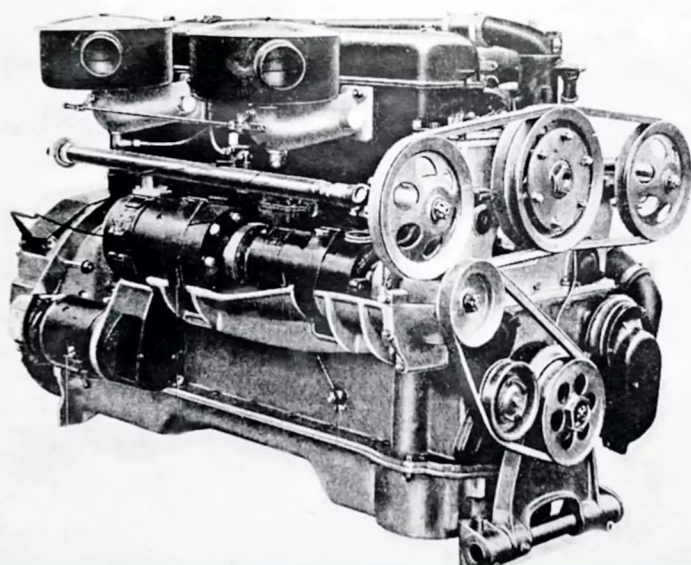
And finally, we come to the Valentine tank, a 1938 private venture by Vickers-Armstrong that, following adoption

by the War Office, became known as ‘infantry tank, Mk 3’. In all, the Valentine was produced in 11 marks, with the Mk 1 powered by an AEC A189 six-cylinder petrol engine, with a power output of 135bhp (100kW) from a capacity of 9636cc (588in³), and Mk 2, 3 and 8 were diesel powered, using a 9636cc (588in³) A190 six-cylinder

engine producing 145bhp (108kW).

The prototype was submitted to the War Office just before Saint Valentine’s Day 1938, which, so legend would have it, is how the tank got its name... although it’s also worth pointing out that Valentine was the middle name of John Carden, who was technical director at Vickers-Armstrong. There was some initial resistance to the use of a two-man turret, but a contract was eventually issued to Vickers for 275 tanks to be delivered from May 1940. At the same time, a further 125 were ordered from the Metropolitan-Cammell Carriage & Wagon Company, and 200 from the Birmingham Railway Carriage & Wagon Company. Despite being effectively obsolete by 1942, with a total production of more than 8200 units, the Valentine was one of the most important British tanks of WW2.

During WW2, AEC’s total output of tank engines was around 4000.



● The A190 diesel engine as fitted to the Valentine Mk 2, 3 and 8; the engine produced 145bhp (108kW) from a capacity of 9636cc (588in³).



● The Valentine Mk 3 infantry tank was powered by an AEC A190 six-cylinder diesel engine.

AEC TANK ENGINES

Engine	Application	Capacity	Cylinders	Bore and stroke	Fuel	Valves	Power output
A170	Medium tank, A7E3 (left)	7740cc (472in ³)	6	105x146mm	diesel	overhead	126bhp (94kW)
A171	Medium tank, A7E3 (right)	7740cc (472in ³)	6	105x146mm	diesel	overhead	126bhp (94kW)
A179	Cruiser tank, A9, A10	9636cc (588in ³)	6	120x142mm	petrol	overhead	150bhp (112kW)
A183	Matilda, A12 (left)	6610cc (403in ³)	6	105x130mm	diesel	overhead	100bhp (74kW)
A184	Matilda, A12 (right)	6610cc (403in ³)	6	105x130mm	diesel	overhead	100bhp (74kW)
A189	Valentine Mk 1	9636cc (588in ³)	6	120x142mm	petrol	overhead	135bhp (100kW)
A190	Valentine Mks 2, 3 and 8	9636cc (588in ³)	6	120x142mm	diesel	overhead	145bhp (108kW)

...AND THE OTHERS

**There's more to it than just the Marshal, Matador and Militant...
and a handful of armoured vehicles**

In its 65 or so years of operation, AEC grew from being a sole supplier to the London General Omnibus Company, to become a truly global enterprise, supplying trucks and buses to companies across the world. The company supplied its first military vehicle, to the British Army, in March 1915, and its last, an Ergomatic-cabbed Mammoth Major nuclear warhead carrier for the Royal Navy, in 1979. And although the iconic machines such as the Matador and the Militant were produced in large numbers, and need little introduction, clearly they don't tell the whole story.

Since supplying B Type buses to the War Office in 1914, the company has been involved in the manufacture of other types of military vehicle for much of the ensuing 60 years. Alongside specialised machinery, such as the RAF's missile-toting Mandator, and the low-profile Mercury aircraft refueller, AEC has also supplied large numbers of essentially-civilian vehicles, such as the Mammoth Major, and the Mercury, to all three branches of the British armed forces.

A 1966 leaflet entitled 'AEC Military Products' lists the Mercury, Mammoth Major and Mandator as being suitable for military customers 'to suit a range of non-tactical supply and support roles'. AEC's entry in the 'British Defence Equipment' catalogue for 1969 includes reference to a Militant Mk 3 tipper, and Mammoth Major Six and Eight fuel tankers, whilst the 1972 edition includes the Mammoth Major Six, Mandator, and Monarch fifth-wheel tractors. All subsequent entries in the 'British Defence Equipment' catalogue saw the products identified as Leyland... until Leyland itself merged with DAF in 1987.

● The B-Type could carry 24 fully-equipped infantrymen and their kit. At first the buses retained their original red and white livery, but this eventually gave way to the inevitable all-over khaki finish with boards nailed over the windows to reduce the risk of injury should the bus come under fire.



● Production of the London General Omnibus Company's B Type bus started in 1910 and continued until April 1919. A total of 900 were used to move troops behind the lines during WWI; this example was equipped as a pigeon loft.





● Operated by the American Red Cross, and in this case painted a uniform all-over grey and nicknamed 'Mississippi', this AEC Regal Clubmobile was one of 32 similar vehicles equipped for dispensing doughnuts, coffee and cigarettes to US servicemen.

But, by the early 'seventies, the company had already produced its last purpose-made military vehicles and it must have been obvious that the end of what was once a great company, was nigh. AEC had been absorbed by Leyland in 1961, and, in 1970, the distinctive triangular AEC badge had been replaced by Leyland's 'whirling circle', although 'AEC' continued to appear on the lower grille panel.

The last 'real' AEC to be produced at Southall was a Mammoth Major Eight that was constructed towards the end of 1977... less than two years later, on 25 May 1979, the company finally closed its doors for the last time.

B Type

Introduced in October 1910, the AEC B Type was produced in sufficient numbers that it could be considered as the first mass-produced bus. It was designed by Frank Searle, chief engineer of the London General Omnibus Company (LGOC), and featured a 5300cc (323in³) four-cylinder engine, a worm-drive and chain gearbox, and steel wheels with solid tyres. Its top speed was 16mph (26km/h) and the body had space for 34 passengers.

During WW1, numbers of these buses had their bodies removed and were rebuilt as 2.5-ton cargo trucks. And in 1916/17, a total of 150 B Types, although at the time they

were described as Z Types, were constructed with a water pump and a larger-capacity radiator for the Russian Imperial Army. The Russian Revolution, which started in May 1917, meant that it was unlikely that the trucks were delivered.

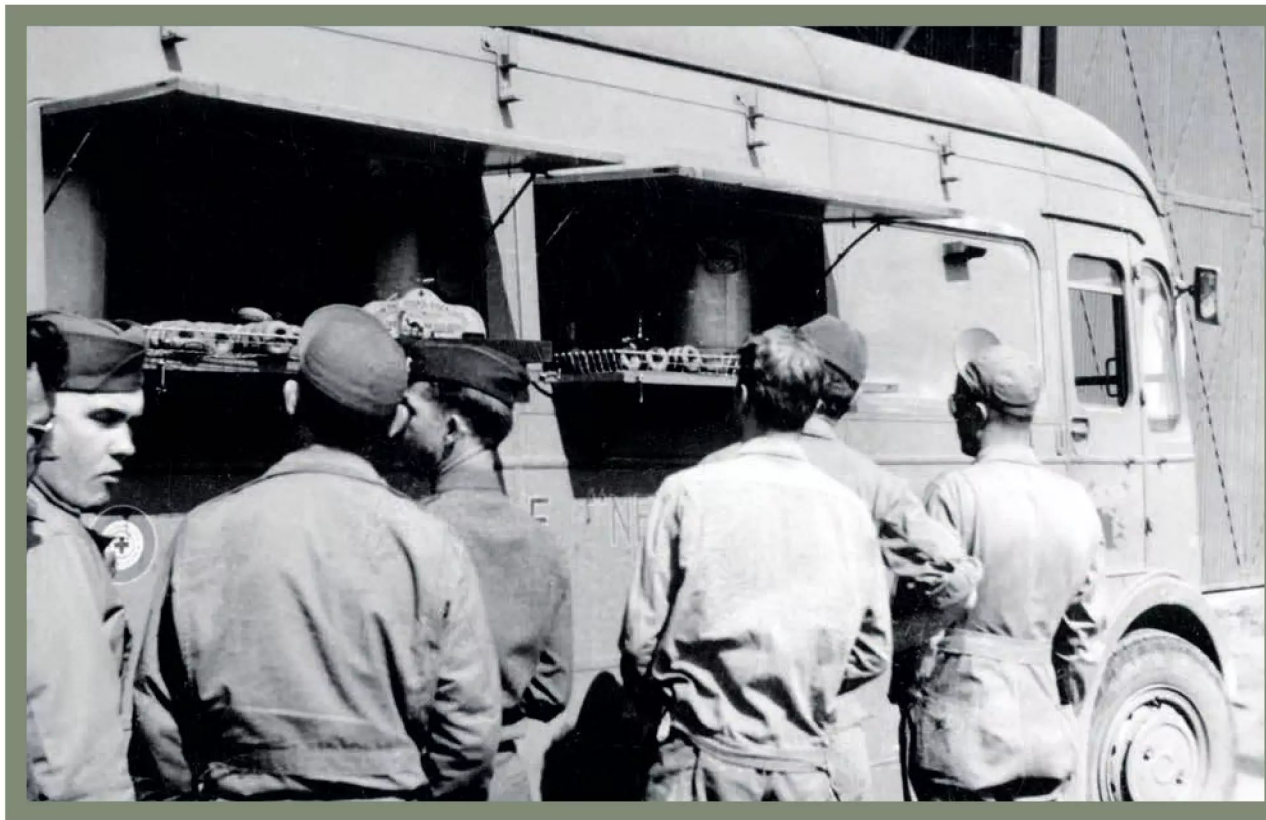
In addition, a total of 900, some sources suggest the number was 1300, buses were purchased from the LGOC to provide troop transport in France

and Belgium during WW1. After initially serving in the distinctive red livery, they were painted all-over matt khaki, and, in order to avoid injury to passengers from shell burst, the glass from the lower-saloon windows was removed and replaced by wood nailed to the sides of the vehicle. In military service, the B Type could carry 24 fully-equipped infantrymen complete with personal kit.

B Type buses were also employed as pigeon lofts, ambulances and field kitchens, and the B Type was also used to produce an early armoured car. Forges et Chantiers de France, based in Dunkirk, constructed an armoured vehicle on the chassis of a B Type bus, delivering it to the Royal Naval Air Service on 17 September 1914. A second vehicle was also constructed by Forges et Chantiers, and a third, to a different design, was built at the Royal Arsenal, Woolwich. However, there was no series production of any of these vehicles.

● The Clubmobiles were staffed and operated exclusively by American women, always apparently described as 'girls', who were certainly as welcome a sight as the doughnuts and the coffee.





● Allocated to cities close to American bases in Britain, the Clubmobiles visited a different location each day, dispensing the comforts of home to US servicemen who were training for their part in battles to come.



● AEC Mandator from the 'sixties, equipped with hydraulic equipment for loading and transporting Britain's Blue Steel missile, an air-launched 1.1-megaton nuclear weapon carried by Vulcan and Victor aircraft.

Construction of the B Type ended in April 1919.

K Type with Bauly semi-trailer

In 1919, a London-based wagon repair company, HC Bauly Limited of the Bow Wagon and Wheel Works, modified an AEC K Type chain-drive solid-tyred bus chassis to produce what was essentially a tank transporter. The chassis was shortened, and a (double) crew cab was fitted, together with a fifth wheel that rested directly on the rear axle. A matching 5-6 ton (5.09-6.11 tonne) semi-trailer was also produced that was designed to carry Holt artillery tractors; the trailer could also be coupled to a dolly that allowed it to be used with a drawbar tractor.

In 1928, one of these tractors was trialled carrying a Vickers medium tank, which weighed around 12 tons (12.2 tonnes) but, during trials, it was considered to be too slow and was unsuited to off-road use. The Army never purchased more than a handful of these vehicles, and Bauly went into voluntary liquidation in 1931.

Models 501 and 506

Introduced in 1921, AEC's Model 501 was little more than a Y Type in which the original Tylor or AEC engine had been replaced by an AEC 5-type (A109), a four-cylinder unit producing 45bhp (33kW) from a capacity of 6786cc (414in³). In 1925, this was replaced by the 5-ton Model 506, dubbed Grenville, using the same engine, and driving the rear wheels via a four-speed gearbox. Solid tyres were still the standard fitting, but pneumatics were available as an option.

A small number of the Model 506 were purchased by the War Office, in 1926, and were issued to the Royal Army Service Corps (RASC) as 3-5 ton GS trucks, with solid tyres, and 3-5 ton mobile workshops riding on pneumatics.

Regal 10T10 Clubmobile

The AEC Regal 10T10, better known to bus enthusiasts as the London



● The vehicle designed to carry the Blue Steel missiles was designated FV11081 and, uniquely, was equipped with a half-cab. The missile was both loaded and carried in the semi-circular cradle.



● Dating from 1963, FV12381 was a low-profile AEC Mercury equipped with a 2200-gallon (9988 litre) refuelling tanker. The top part of the cab was removable to allow the vehicle to be transported by air. The photograph was taken at the Brooklands race track in Surrey. (Phil Moth)

Transport 'T Class', was introduced in 1929 and, in one form or another, remained in production until 1948, by which time the production total had reached 801. In 1938, London Transport had purchased 266 of these vehicles to replace older Regals that dated back to 1931. Powered by the newly-developed 8810cc (538in³) A180 direct-injection six-cylinder diesel engine, and with a power output

approaching 115bhp (86kW), the new Regals were put to work on the long-distance Greenline network.

In 1939, the Greenline services were curtailed, and many vehicles became surplus to requirements. Some were transferred to operate on bus services, others were converted for use as six-stretcher ambulances, and as mobile dental clinics... and a total of 32 were passed to the American Red Cross for



● This rear view of the FV12381 tanker nicely demonstrates the elliptical shape of the fuel tank. (Phil Moth)

use as Clubmobiles. In this role, their normally-attractive two-tone green livery was replaced by an all-over matt grey finish and they were often given the name of American cities. The original interior seats and fittings were removed, and the saloon of the Clubmobile was re-fitted with a lounge, a kitchen, complete with sink, and serving counter... and, most important

of all, a doughnut-making machine.

The vehicles were allocated to towns close to American bases and were driven to a different location each day where the staff, exclusively female, operated the facilities, making hundreds of doughnuts and preparing coffee, which was distributed to the men at their work. They also carried cigarettes, Lifesavers, and chewing gum.

By the time the Clubmobiles were handed back to London Transport, they were looking very shabby indeed, but most were renovated and re-entered service, enjoying another decade or so of public service.

Mandator missile carrier

Introduced in the early 'sixties, especially for the RAF, the Mandator missile carrier was a long wheelbase, half-cab version of the GR4A Mandator Mk 5 equipped with davits and a rubber-mounted superstructure for transporting the Blue Steel missile.

Designated FV11081, and rated at a nominal 10 tons, the truck was powered by an AEC AV690 engine, producing 179bhp (133kW) from a capacity of 11,310cc (690in³), and driving the rear wheels through a five-speed gearbox. A separate clutch, brake and gearbox assembly was provided for the missile-handling equipment, with mechanical interlocks to prevent operations being carried out in the wrong sequence.

Weighing some 17,000 lb (7700kg) the Avro Blue Steel was a British air-launched, rocket-propelled standoff missile, carrying a 1.1 megaton W28 Red Snow thermo-nuclear warhead, that was used to arm the Vulcan



● Although it started life as a low-profile refuelling tanker, this AEC Mercury was converted to dispense Konsin de-icing fluid.



● FV12281 was an AEC Mammoth Major Eight with a high-visibility cab designed to be equipped as a high-pressure aircraft-refuelling tanker.



● Post-war AEC Marshal with an insulated van body equipped for separating and bottling atmospheric oxygen and nitrogen.

and Victor aircraft of the 'V bomber' force. A total of 53 live rounds were manufactured. Blue Steel was phased out at the end of 1970, when the Royal Navy started operating Polaris ballistic missiles from Resolution class submarines. The trucks were based at RAF Scampton in Lincolnshire, and RAF Wittering in Cambridgeshire, and the total number constructed may have been as few as 16.

Mercury Mk 2 fuel tanker

Designated FV12381, and dating from 1963, this vehicle consisted of a low-profile 2200-gallon (9988 litre) refuelling tanker constructed on the 2GM4RA Mercury Mk 2 chassis for the RAF. Power was provided by an AEC AV470 six-cylinder turbocharged diesel producing 138bhp (103kW) from a capacity of 7685cc (469in³), driving the rear wheels through a five-

speed gearbox. The top part of the, somewhat rudimentary, cab was made from glass-fibre composite material, and was removable; the steering wheel could also be easily removed, and the windscreen folded forward, to allow the truck to be transported, unladen, in Argosy, Beverley, Belfast and Hercules aircraft.

The flexibly-mounted fuel tank was manufactured in a flattened ellipse shape in order to reduce the overall height, and was constructed from aluminium. Lightweight Zwicky pumping equipment was housed in a compartment between the cab and the tank, capable of dispensing fuel at a rate of 300 gallons (1365 litres) per minute.

Registration records suggest that a total of 52 vehicles were constructed.

AEC Mk 3

Introduced in the immediate post-war years, AEC's Mk 3 range included the Mammoth Major, in both six- and eight-wheeled configurations.

A military version of the Mammoth Major Eight was displayed at the exhibition of British military vehicles held at FVRDE's Chertsey site in 1956.



● AEC Mandator Mk 5 refuelling tanker belonging to the Royal Navy.



● Mammoth Major Six GS cargo truck showing the Ergomatic tilt cab that was adopted across the Leyland Group range in 1964.

Designated FV12281, and equipped with a special three-man cab designed to improve all-round visibility, the truck was intended to carry high-pressure aircraft-refuelling equipment. Power came from an AEC A223 six-cylinder diesel engine producing

150bhp (112kW) from a capacity of 11,310cc (690in³), and there was a five-speed manual gearbox.

The Mammoth Major Six was also used as the basis for an aircraft-refuelling tanker, with a total of 350 constructed by Maudslay in the early





● One of a batch of Mammoth Major Six 3000-gallon (13,620 litre) refuelling tankers supplied to the RAF in 1968. The equipment locker is opened, displaying the Zwicky pumping equipment.



'fifties, and the Royal Navy had a number of 10-ton Mandator Mk 3 prime movers.

AEC Mk 5

In 1958, AEC announced the much-improved Mk 5 range of vehicles. Gone was the old upright cab and radiator, replaced by a softer more contoured look, combined with a wider, more stylish, grille. The outer skin of the cab was produced by Park Royal Vehicles, and there was also a range of new engines.

For the RAF, the Mammoth Major Six Mk 5 was equipped with a hydraulic access platform for use as an aircraft de-icer. The Mandator Mk 5, which shared many components with the Mammoth Major, was used as the basis for an aircraft-refuelling tanker. And, the name Marshal, first used back in 1931, was reintroduced in 1960 for a range of six- and eight-wheeled trucks, including an intriguing Motor Panels cabbed mobile oxygen plant.

In 1964, along with other companies in the Leyland Group, AEC launched the new Ergomatic all-steel tilt cab at the Commercial Motor Show. The new cab, which could be tilted forward to an angle of 55° to ease access to the



● RAF Mammoth Major Six 3000-gallon (13,620 litre) refuelling tanker. (Phil Moth)

engine and transmission, started to appear on production trucks during 1965. The Army acquired a number of Mammoth Major Ergomatic-cabbed six-wheeled chassis equipped with

a steel and timber drop-side body, and, in 1968, the RAF specified the Mammoth Major Six for a refuelling tanker, with Gloster Saro pumping equipment, as a road tanker, and as



● Mammoth Major Six designed for transporting nuclear warheads. Note the armoured body and windscreen and the fact that the AEC triangle has been supplanted by the whirling Leyland logo, which dates this photograph as 1970 or later.



● AEC Mandator tractor of the Royal Navy.

● RAF road-going fuel tanker on the Mammoth Major Six chassis dating from 1969.





● RAF Mammoth Major Six fitted with a 10-ton cargo body. (Phil Moth)

a nuclear weapons carrier. The last named was fitted with an armoured cab and body produced by Marshalls of Cambridge. Described as 'transport, cargo, heavy duty', it was used for transporting WE177 warheads... the last nuclear bomb in service with the RAF. The vehicle was always escorted by RAF police and a suitable recovery



● Painted matt green, this is another of the RAF's Mammoth Major Six 3000-gallon (13,620 litre) refuelling tankers. Note the unusual pusher extensions on the front bumper. (Phil Moth)



● With a platform that can be raised to a height of 74 feet (22.57m) this Mammoth Major Six de-icing sprayer could accommodate the largest RAF aircraft in service during the 'seventies. (Phil Moth)

vehicle when on the road. The RAF also employed Mercury tractor units.

And, finally, the Royal Navy purchased a number of Mandator and Mercury tractors, as well as long-wheelbase Mammoth Major Six 10-ton trucks with an all-steel drop-side cargo body.

Trailers

And, lastly, AEC was apparently also a manufacturer of trailers! The company is listed in the guide to the 1954 exhibition of military vehicles at Chertsey as being the supplier of the FV2623A 4-ton four-wheeled launch and recovery trailer for the Mk 7 motor tug.

THE LAST WORD

**The last AEC left Southall more than forty years ago...
but, these old warriors were built to last!**

● Photographed at the yard of Main's Motors of Ewelme, Oxfordshire, this FV11013 AEC/AWD Militant Mk 1 could best be described as shabby but sound... but they've been brought back from a worse condition than this!
(Phil Moth)



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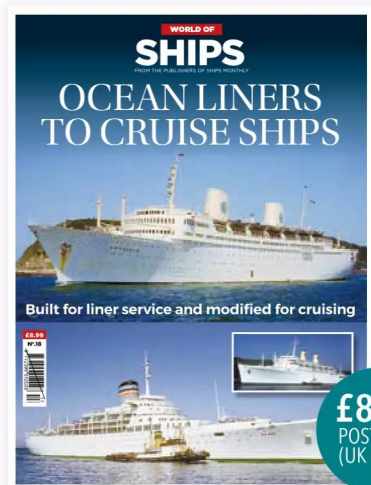
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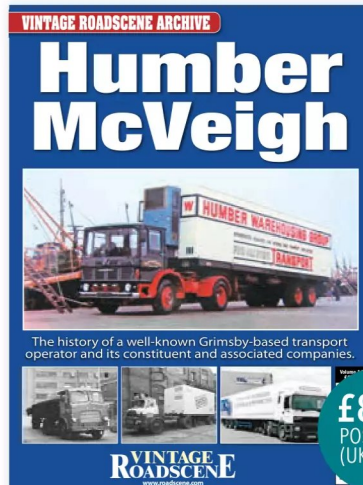
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BRITISH MILITARY VEHICLES

SOFT-SKIN CT AND GS VEHICLES OF THE 'FIFTIES

At the end of WW2, the British Army had something like 1.25 million soft-skin vehicles, consisting of around 600 different types arranged in 55 categories. They were a motley mix of home-grown and US designs, with many well past their sell-by dates. Clearly this was not a situation that could continue, and with the Cold War looming, it was time to step back and take a good look at what was going to be required during the next decades.

The War Office had gradually come around to the view that 'the design of military vehicles had become sufficiently divergent from mainstream commercial vehicles', that all soft-skin – or 'Category B' vehicles – should be designed by government agencies.

And so there began a great rationalisation.

Thousands of WW2 vehicles were sold at auction or passed to the newly-liberated European nations, to be replaced by a range of new, standardised vehicles, planned in six weight classes. Within each class there were to be 'combat' (CT) and 'general service' (GS) types. The CT class was described as 'specialised military vehicles with multi-wheel drive, manufactured from components not used for



commercial purposes, and required to give the best possible load-carrying capacity and cross-country performance, with or without the appropriate guns or trailers'. The GS class consisted of 'militarised versions of standard civilian products', described by FVRDE as being 'for the less spectacular, but equally important, supporting roles'.

It was a splendid idea but, predictably, whilst the CT vehicles were technically innovative, they proved to be expensive and generally unreliable, and the GS vehicles could generally do the same job at a far lower cost. Within less than a decade, the whole idea had been dropped. Ah... the misplaced optimism of those post-war years!

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